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The Outlook

British Bombing Policy

IN this "war of Europe" Britain, the Dominions, and their Allies are operating on exterior lines. We have often been told (it was well rubbed in during the last war) that it is a great advantage for an army to possess interior lines. That is true, but the opposite is true of a naval Power. With command of the sea, exterior lines mean the possibility of taking the initiative and attacking at any suitable point when the suitable moment comes. For the moment our leaders have decided that we must stand on the defensive, but they assure us that we shall attack in our turn. They may be waiting for the coming increases of the Navy and Air Force to take effect. The Government has information not available to us all, and without that information the public cannot fairly judge the wisdom of the policy adopted.

Nevertheless, advice is constantly offered to the Government as to what its next steps ought to be. On one side one reads articles urging that as Italy is the weaker partner in the Axis we ought to lose no time in starting an offensive against her. To this Government spokesmen have replied that Germany is the important enemy and must monopolise our attention for the time being. Again, it is sometimes suggested that our air attacks on Germany are too haphazard, and do not take into account the most important ways of crippling the enemy's war effort. Whether the suggestion is well-founded *Flight* cannot judge, but at least the Air Ministry has given a good answer. The other day the officer responsible for drawing up plans at the Ministry explained that it was through the Ministry of Economic Warfare that the R.A.F. knew which targets to attack in order of military importance. That Ministry certainly ought to have good information, and the plans of the Bomber Command should have a sound basis. In due time, however, the R.A.F. net will grow wider.

Long and Difficult

THE Italians are a very intelligent people, and it is stated on all sides that they are not enthusiastic about the present war. The capture of Berbera and Sollum is a poor compensation for the privations imposed on them by the blockade. The official Italian wireless frequently tries to comfort them. On September 9 it announced in Italian to the home audience: "It is certain that the British people are about to surrender." That must have sounded very consoling. Yet two days later the Rome broadcaster, speaking at the same time and presumably to the same audience, stated "The Italian plan (in the Mediterranean) consists in destroying and gradually neutralising the enemy air defence. This task will be long and difficult." The listeners must have been puzzled to reconcile those two statements. Yet the second one was undoubtedly true. Even the appearance in the Mediterranean of German dive-bombers of the type Ju 67 (which must be somewhat galling to Italian *amour propre*) does not seem to have made the task appreciably shorter, while the introduction of Hurricanes into Malta will hardly make it less difficult. Last week the Middle East communiqué recorded an attack by the Junkers on Malta. They were accompanied by fighters and attempted to dive-bomb the aerodrome. Malta suffered no casualties, while two Junkers and one Fiat Cr 42 were shot down by the Gladiators and Hurricanes. Two Italian pilots came down by parachute and were made prisoners of war. British Empire bombers continue to harry the Italian forces on both fronts in Africa, and their losses from enemy fighters are almost microscopic. Italian machines destroyed in East Africa cannot be replaced. The Italian public may not learn all these facts, but it must certainly be wondering when the prophesied surrender of the British people is to become a fact.

Actual German Losses

ONE reads with satisfaction that commanding officers of fighter squadrons are now warning their young pilots not to follow a smoking German machine down in order to see it crash and get a "confirmation." It is a natural instinct for a pilot to want certain knowledge of the result of his fight, but like many natural instincts it often results in mischief. It will be remembered that in the last war the great Baron von Richthoven, who was a cautious fighter but undoubtedly a scalp-hunter, lost his life in that way. He chased young Lieut. May down almost to ground level and was himself shot down, either by Capt. Roy Brown or by machine gun fire from the ground. The fighter pilot who lets his quarry go as a "probable" can stay with his formation and perhaps do more good work, besides avoiding a great risk to himself. To take a cricket simile, playing for one's side is always better than playing for one's average.

But if the fighter pilots do not know whether the smoking bomber crashed or struggled home, the German authorities know the result, and it is the result which matters. In fights over Great Britain the crashed German machines can be counted at leisure, though it sometimes takes a couple of days to get the tally right. When the action takes place over the sea it may well happen that the number of German machines put down as "probables" or "damaged," and so not counted as British victories, may outnumber the confirmed losses.

Not So Sensible

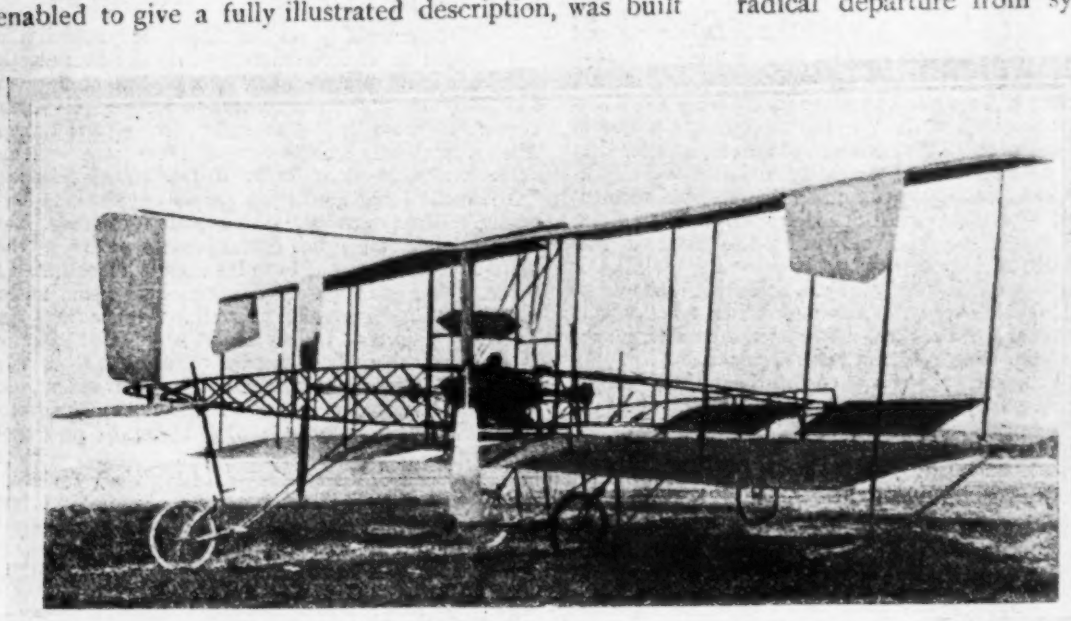
THE Ministry of Aircraft Production has lately had many pats on the back, and we have no doubt that in the main they have been well deserved. But the M.A.P. is not immune from what seems to be a tendency of many Government Departments just now, of making ill-considered requests from the public, knowing that, in the public's enthusiastic mood, to ask is to receive. "Go to it" was good; "Up housewives and at 'em" was not so good. Appeals for binoculars seemed a little unreasonable when numbers of pairs could be seen for sale in London shops. But listen to the latest from the M.A.P.: "If members of the public have information about damaged aircraft on the ground unattended by salvage personnel of the R.A.F. they are asked to communicate without delay with the Ministry of Aircraft Production, Millbank, London, S.W.1."

Why not tell the nearest policeman? He will certainly pass the information through without delay, and will undoubtedly take steps himself to see that the machine in question is guarded from souvenir-hunters until the R.A.F. men arrive. If once numbers of enthusiastic members of the public start trying to communicate direct with the M.A.P., we can foresee no end of confusion and congestion on the lines. That aircraft would probably be reported by any number of separate private persons, by telephone, by telegram, and by letter. As a telegram now may take days to reach its destination, the souvenir-hunters would have plenty of time.

that he has just gained at the disposal of fellow British workers in the interests of the aeronautic movement.

The machine of which we are, by his courtesy, now enabled to give a fully illustrated description, was built

As will be observed from important and original featu machine, although in gener radical departure from syste



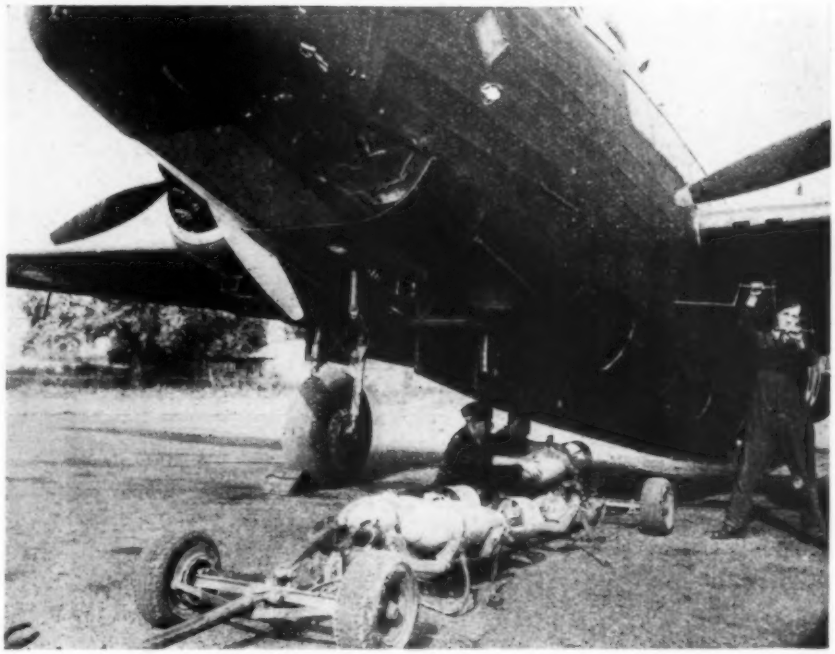
"Havilland No. I" completed and ready for trial. Note the bevel-driven propellers and the hinged wing-tips.

entirely by himself and by his assistant, Mr. F. T. Hearle. internal softness which was n

THE ORIGINAL DE HAVILLAND. On other pages we record the passing of twenty years since the inception of the De Havilland Aircraft Co., Ltd. Here is a photograph from a page of *Flight* of April 9, 1910, showing the very first machine Capt. G. de Havilland designed and built with the assistance of Mr. F. T. Hearle, who is also a director of the present company. For over 30 years Capt. de Havilland has designed, built *and flown* his own machines.

WAR in the AIR

Battle of Britain Goes On : Invasion Ports Hammered : Middle East Ready



LOADING UP : Bombing up a Wellington for its nightly trip to the Continent. The optical flat panel for the bomb aimer is clearly seen under the nose with the downward recognition light immediately behind it.

THE Secretary of State for Air, Sir Archibald Sinclair, on *Wednesday, September* 18, unveiled a portrait of a young pilot who has been posted "Missing, believed killed," and made a speech, in the course of which he said:—

"Some people say that we ought to repay the Germans in kind for their attacks upon our civilians. The truth is that it would be a betrayal of the suffering people of London to divert any of our resources from military objectives. Remember, in the first place, that the German heavy bomber force is much more numerous than ours. Then remember that their journey is many times shorter than ours, which not merely adds to—it multiplies—their numerical superiority. In a slogging match the big fellow is bound to win. We are confident of beating him, because our machines are better than his and because our men are much better and better trained, but we shall only beat him by clever fighting—by landing our blows where they hurt and weaken him most.

"Moreover, supposing we spilt our bombs indiscriminately over the civilian population of Germany, how would that protect our own people? That slogging match might go on for months, merely spreading ever-increasing misery and ruin in both countries. What we are doing is to use our available resources to smash up the German transport system and thus slow down the manufacture and distribution of munitions of war of all kinds, to smash up the factories in which the Germans make their aircraft or in which they make the instruments without which the aircraft couldn't be flown here, or the power houses which supply the electricity to the factories or the oil which supplies the motive power.

Bad German Moral

"BUT don't let us fall into the vulgar error of supposing that the bombs fall any less heavily on Germany because they are well and shrewdly aimed. We have received information of a very heavy fall in the industrial output of the Rhineland—and the principal reason given for that fall is the workers' lack of sleep. So badly has the *moral* of the German workers suffered that penalties have had to be imposed and publicly announced for late arrival at work. We know that there has been a flight of people on a large scale from their homes in the Ruhr to France, Belgium, and even to Austria."

Continuing, Sir Archibald gave the following figures:—Since the *Blitzkrieg* started on August 8 we have lost in action against the enemy 621 machines of all types, fighter, bomber, and general reconnaissance. The enemy during the same period has lost 1,867. Their losses in air crews amount to very nearly 4,000; ours to less than 600. In the air fighting in the Middle East during the same period we have lost 15 aircraft, but destroyed 56 Italian aircraft, and remember, too, that I am only giving you the figures of confirmed German and Italian losses, in addition to which there is a wide margin of error in the two other categories in which enemy losses are grouped—unconfirmed and damaged. . . . Meanwhile, we have had to face attacks both by day and night. Of these the day attacks are by far the most dangerous. German mastery of the air over Britain by day would spell our inevitable defeat. Our munition factories would be smashed one by one—our towns and cities razed to the ground. Recent battles by day have shown that we are well—almost miraculously—protected against these grave dangers."

London had three "Alert" warnings in the morning of *Monday, September* 16, each lasting about half an hour, and in the afternoon there was one long one from 2.10 p.m. to 6 p.m., but no bombs fell in Inner London. The night raiding started at 8.12 p.m., and it appeared that the Germans were trying new tactics to elude the heavy A.A. gunfire. They sent over fighter-bombers, carrying fewer and lighter bombs than had been used on previous nights. They concentrated their attention mostly on the West End, but did no damage of real importance. There were also raids on the Midlands and the North-West. One enemy bomber hit a balloon cable and was wrecked, and, altogether six bombers were destroyed in the night.

Enemy activity was on a small scale on the morning of *Tuesday, September* 17. About 5.15 p.m. several large waves of enemy aircraft crossed the coast of Kent, but when attacked by fighters they scattered and did not penetrate farther inland than Maidstone. In this action the A.A. guns shot down two and fighters destroyed five more. The toll was increased before night fell. In one raid seven Messerschmitts were attacked by a solitary Spitfire. They immediately turned for home in such disorder that two of them collided and crashed. That night, however, was

NOT EASY MEAT. Messerschmitt Me 109's attacking a balloon barrage in the South East. Since the exact height and position of the balloons is known the A.A. fire is particularly accurate.

WAR IN THE AIR (CONTINUED)

very busy, probably because of the bright moonlight. There was a heavy surprise raid on a town in the North-West, and the bombers did much damage and caused the heaviest casualties yet experienced in that part of the country. One German aeroplane machine-gunned women and children as they ran to shelter. Gas, electric, and water mains were damaged, and a heavy bomb made a direct hit on an A.F.S. post and killed a number of auxiliary firemen. There was also a raid on Glasgow, where slight damage was done to industrial premises, and another on a town in S.W. England.

The raids on London started soon after 8 p.m. Searchlights, which had not been used for several nights, came into action again. A "Molotoff breadbasket" dropped some 50 incendiary bombs in a S.E. district of London, but they mostly fell on a golf course and in gardens, and did little damage. Londoners were grieved at the damage to three popular stores in Oxford Street, namely, those of Bourne and Hollingsworth's, Lewis's, and Evans', but there were few, if any casualties, and the Empire's war effort was in no wise impaired. In fact, one critic remarked that the Germans were helping to enforce the British Government's appeal to the public not to spend money on luxuries.

Visible Vortices

WEDNESDAY, September 18, was a fine bright day, with small lumps of cumulus cloud dotting the blue sky. It turned out that the conditions were very favourable for the formation of visible vortices, and Londoners took great interest in watching the trails of daylight raiders dodging from cloud to cloud with fighters after them. Five separate waves of bombers and fighters came over between 9 a.m. and 8 p.m., but only one small formation reached London, where it flew round the outer circumference without doing damage. Each wave, whether of bombers or fighters, was met by Hurricanes and Spitfires, and it was just when the enemy's effort was strongest that our pilots won the biggest successes. All five attacks followed roughly the same course, crossing the Kentish coast between Dungeness and North Foreland. The first, at 9.30 a.m., consisted mostly of fighters, about 100 of them. The second attack came soon after noon, when five groups of bombers and fighters crossed the coast. One raid of 15 bombers, surrounded, as one R.A.F. pilot said, by a "sphere of Messerschmitt 109 fighters," was dispersed so quickly when the Spitfires met them near the Kentish coast that only three of our pilots got a chance to fire. A patrol of Hurricanes met a formation of bombers heavily protected by Messerschmitts stepped up in tiers above them, near the Isle of Sheppey on their way up the Thames Estuary. The Hurricanes made a head-on attack on the bombers. "They jettisoned their bombs even before we attacked," one of the Hurricane pilots said, "and went straight out over Folkestone." The third and fourth attacks came in quick succession. Soon after 4 p.m. another 100 of the enemy came in over Kent, again making for the Thames Estuary. Before this attack was over, another 250 bombers and fighters were already on their way, and one formation of as many as a hundred came in by Dungeness. It was these two attacks which took the roughest handling from our fighters. A squadron of Spitfires met one group of bombers and fighters over Kent and shot down five of the bombers and one Messerschmitt 110 fighter-bomber as well as sharing in the destruction of another Heinkel.

The best was to come. Near the Thames Estuary, a single squadron of Hurricanes shot down eight Dornier bombers and three Junkers 88s as well as sharing in the destruction of three more. In the same fight two other patrols of Hurricanes accounted for nine more bombers. Finally, the enemy's broken formation were chased back again towards France.

The night raids on London started just before 8 p.m., and it seemed that more bombers than usual were at work. The A.A. fire was also louder than on any previous night. The casualties were heavy, one estimate giving 90 killed and 350 seriously injured. Bombs were dropped on Merseyside and on several towns in Lancashire, causing casualties. Less destructive raids were made on the Home Counties.

Night Bombers Shot Down

THURSDAY, September 19, was a comparatively quiet day in London. Two German bombers reached the East End soon after lunch-time, and dropped about half a dozen bombs, causing damage and casualties. Both were attacked by our fighters, and one of them was shot down. There were small-scale raids on places along the coast, which caused few casualties and resulted in the loss to the enemy of a small number of bombers.

The night was very rainy. The number of night raiders seemed smaller than usual, and they were reported to have arrived one by one from the North West. Searchlights went into action and British fighters engaged the enemy. Over London itself a vigorous barrage was put up by the A.A. guns. The warning lasted from 8 p.m. until 5.45 a.m. next morning.

Although the problem of defeating night raiders has not been completely solved by the Fighter Command, and still less by the German *Flak* fire, the British defence system is growing more efficient. In nine nights of raiding the enemy lost 23 machines, of which 16 were brought down by A.A. guns, five by fighters, and two by the cables of balloons. The A.A. batteries have by now shot down between 200 and 250 enemy aircraft over Great Britain. It is an interesting fact that four enemy machines have been shot down by a French ship at Portsmouth.

Delay-action bombs have been a nuisance in London. One fell not far from the American Embassy. The R.E. Sappers who deal with them have done heroic work, and some of them have lost their lives. Several have been decorated with the Empire Medal for Gallantry, which has been thoroughly earned. The most notable case was that of a bomb which fell near St. Paul's Cathedral. Lieut. R. Davies, R.E., and his section worked for three days before

WAR IN THE AIR (CONTINUED)

they were able to dig it out. It had buried itself 27 feet in the ground, and proved to weigh a ton. It was taken away to Hackney Marshes and there exploded without disaster.

Friday, September 20, and *Saturday*, 21st, saw comparatively little daylight raiding, and the nights were largely repetitions of the previous nights. The night bombing was again indiscriminate, wrecking private buildings and killing citizens without doing any military damage. On *Sunday*, 22nd, the sky was very cloudy and that hampered the fighters. Some few bombers remained over London two hours at a time.

Checking the Invasion

ALL through these days the Government and the country were on the alert for an attempt at invasion. Once it was rumoured that a part of the German flotilla had put out from a French port and had been destroyed by British forces, but the truth turned out to be that it had moved out of harbour to escape an attack by R.A.F. bombers, but had found the sea so rough that it returned at the earliest opportunity. The Navy, of course, was in constant readiness, and the knowledge that its strength would shortly be increased by 50 destroyers bought from the U.S.A. increased the freedom of its plans and dispositions. Information about the grouping of the enemy shipping and concentrations depended on air reconnaissance. On *Monday, September* 16, and *Tuesday*, the 17th, a strong westerly gale was blowing in the Channel, and many of the German surface craft had to leave exposed anchorages to seek for safer quarters. All through the Tuesday aircraft of the Coastal Command were surveying the whole Channel area to locate the new dispositions, though at the same time other machines of the Command were escorting large convoys of British ships as well as searching for submarines. The enemy made no attempt to interfere with the British convoys. As the reports from the reconnaissance machines came in the Bomber Command acted upon them. During the daylight hours on the Tuesday British bombers attacked Ostend, Zeebrugge, and other places. The work was carried on during the night, and other machines made heavy and sustained attacks on the ports of Hamburg, Antwerp, Terneuzen, Flushing, Zeebrugge, Dunkerque, Calais and Boulogne. They also attacked the gun emplacements round Cape Gris Nez. Other British bombers went for distribution centres, the famous Hamm and others. Blenheims and Beauforts of the Coastal Command sank at least two ships in Cherbourg Harbour (one was believed to be a destroyer) and started many fires. That night's work saw the use of one of the largest bomber forces so far sent out on any one night.

One of the pilots who raided Dunkerque said: "I arrived over the harbour a few minutes before 10. My heavy bombs hit No. 5 Dock and some buildings at the dockside. Great pieces of the building went flying through the air. Smaller bombs straddled docks No. 4 and No. 5." Besides the docks and quays, repeated salvoes struck the tidal basin, the sides of the approach channel, and rail sidings to the south.

Boulogne had another tremendous attack, and one sortie just after midnight was particularly successful. Attacking through broken cumulus clouds, the aircraft released a quantity of bombs which fell on barges and other ships in harbour. Flames blazing up from burning barges and a warehouse shone 20 miles out to sea.

About 3 o'clock in the morning Zeebrugge was fiercely attacked. Sticks of high explosives fell in the dock basin and across the harbour entrance, along the entrance channel, over the inner harbour, on the north basin, across the famous mole, and on a group of five cargo boats.

At Ostend the outer and inner harbours, the main docks and south side of the Bassin d'Echouage were all hit, and a group of about 30 barges were bombed.

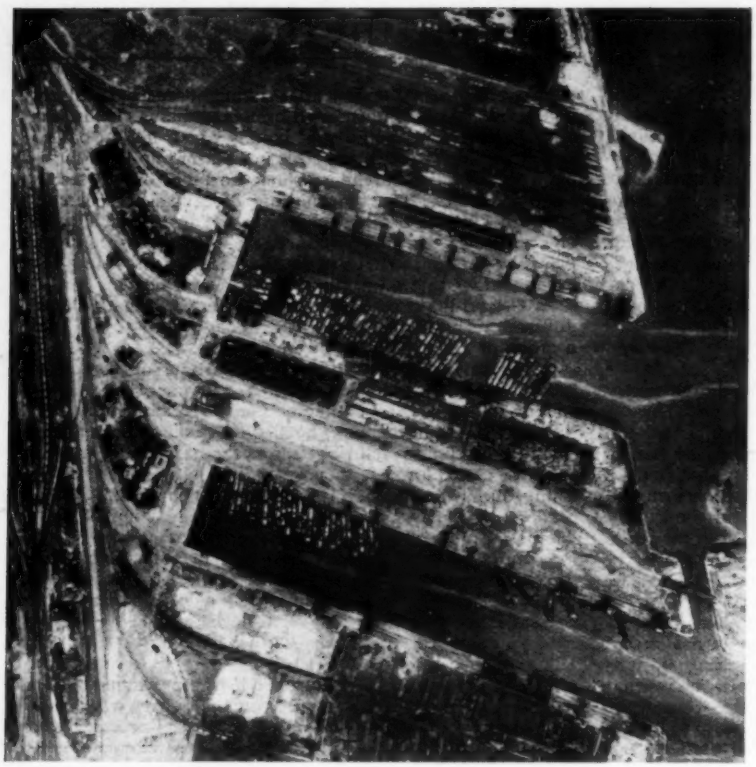
A big barge concentration in the harbour of Terneuzen (south-east of Flushing) was spotted, and one of the raiders, having lurked in the cumulus clouds for nearly an hour awaiting the right moment, hurtled down on them in a dive attack. His bombs fell right across the barges. There was a series of explosions, then spreading flames, and, as he climbed up to 10,000ft., a last tremendous explosion. Other shallow dive attacks resulted in hits right along the sides of the entrance channel and among barges moored to the banks of the Ghent Canal. A crackle of minor explosions followed when barges crowded together at a canal junction near the lock were hit by other sticks of heavy bombs and incendiaries.

Bombing the Barges

THE Antwerp docks again took heavy punishment. Incendiaries started great fires on the quays, while shipping lying in the Scheldt and in the riverside dock were repeatedly hit. Flying suddenly out of the clouds bomber after bomber dropped its salvoes on to the port and ships, and then disappeared again into the clouds while the guns thundered below. One was attacked and "slightly shot up" by two Messerschmitt 109s, as well as being caught in a welter of intense A.A. fire. Like the others, he bombed his target. Another scored six direct hits on ships moored to the town quay.

Over Flushing a bomb-aimer who dropped a stick of H.E.s could not see the bursts, but remarked significantly that "after the attack the barge concentration was seen to have opened up and altered its shape." Here, too, pilots waited in the clouds for some time until the right moment arrived, and then made dive attacks, straddling the ships and docks with their bombs. One pilot bombed a string of

THEY CAN TAKE IT. A Hurricane which brought a pilot 20 miles back to an aerodrome with a dead engine and main plane and tail surfaces in ribbons. The pilot, wounded in the shoulder and the eye, was unable to bale out because the cockpit cover had jammed.



BARGE CONCENTRATION : An R.A.F. photograph showing part of the Dunkirk docks with a concentration of invasion barges in the basin. After the R.A.F.'s nightly attentions it will be noted that there is not a single wharf or building left standing on the quaysides. The more unfortunate barges are, of course, out of sight in Davy Jones' locker.

four ships off the coast as well as barges in the harbour.

In one night raid on Boulogne harbour there were in one of our bombers a sergeant pilot whose home in Chelsea had been demolished by a German bomb and a rear gunner whose mother had been wounded in the leg by bullets from a Junkers 88. That Junkers never got home again. The two men were keen to get their own back. "We dived down through clouds on to the harbour," said the pilot. "Before we dropped our bombs we saw figures running in all directions hurriedly attempting to find shelter. One bomb struck a small cargo vessel, another fell near a light *Flak* gun on the harbour walls, and the gun stopped firing. The rest of the bombs fell round the dock walls. When we reached the bottom of the dive the searchlights came on very accurately and a number of light *Flak* guns opened up at us. We continued diving until we were about twenty feet over the water, and we then headed for home. About two miles out to sea we were fired on by a *Flak* ship, but we silenced the guns with a well-aimed burst from our front machine-guns. The attack on the harbour was made at a low altitude because on a previous occasion when we had bombed Calais we had not been able to see the results of our attack, and this time we determined to be certain we had hit our targets."

The Struggle With Italy

IN North Africa the British forces are also ready for an attack and are expecting it soon. The Italians from Libya, under Marshal Graziani, are massing on the frontier, and have occupied Sollum. This port and village are of little military importance, and the British made no effort to defend it. It had been a base for a very small mobile force, which had harassed the Italians in a very spirited way, and when the enemy advanced in strength this little force was withdrawn. R.A.F. bombers, co-operating with the Royal Artillery, continue to do damage to the enemy, who is unable to conceal anything in the open desert. The Empire Air Forces in Kenya also continue to take action against the Italians in East Africa. A recent communiqué by the Middle East Command reported the destruction of nearly 1,000 Italian lorries at Mogadishu. The South African Air Force, says the communiqué, simultaneously attacked aerodromes at Sciascamanna and Jimma, in Abyssinia, bombing particularly aircraft and buildings. At the first-named place one Savoia machine was directly hit and burnt out and two others were damaged by near misses. Headquarters buildings were also hit. One of our aircraft is missing.

In the raid on Jimma extensive damage was done to Italian aircraft which were found dispersed about the aerodrome. The bag included one Caproni aircraft destroyed, one badly damaged, and seven others damaged by bombs and heavy machine-gun fire, with which the aerodrome was repeatedly raked. A hangar and buildings were hit, and a fire was started near one building.

Sciascamanna is 150 miles due south of Addis Ababa. Recent reconnaissance flights over Mogadishu revealed the effectiveness of the series of recent raids. The lorry park was just a mass of twisted chassis.

Benghazi was attacked by aircraft of the Fleet Air Arm on September 16. During this attack one merchant ship was set on fire, one destroyer was probably sunk and several other ships were damaged. An Italian communique admitted that "a torpedo-boat and a pontoon had been sunk and a few fires started at Benghazi." In the north-eastern Mediterranean one of our convoys and its escort of warships were unsuccessfully attacked by aircraft.

It is officially stated that in the Italian air raid on Tel-Aviv on *Monday, September* 9, 119 persons were killed, of whom 105 were Jews. These included 55 children.

On *Wednesday, September* 18, a highly successful air attack was launched on Italian bases in the Dodecanese Islands. At Maritza and Rhodes fires were started, and several explosions, followed by a large fire, were seen at Calato. Other damage was done at Porto Alago in the Bay of Leros, where a fuel store was hit and fire spread along the coast. This was some punishment for the raid on Tel-Aviv, which must have come from the base in the Dodecanese, and the damage done may make future raids less easy to organise.

In a recent raid on Malta German bombers of the type Ju. 87 took part, with an escort of Fiat fighters. The Junkers machines tried to dive-bomb the aerodrome but hurt nobody. Gladiators and Hurricanes went up and shot down two German bombers and one Cr. 42. Two Italian pilots baled out and were rescued from the sea.

AIR LOSSES IN RAIDS ON BRITAIN DURING WEEK ENDING SEPTEMBER 21

	GERMAN			BRITISH	
	By R.A.F.	By A.A.	Total	Aircraft	Pilots
Sept. 15 ...	178	7	185	25	11
,, 16 ...	2	5 (1*)	7	—	—
,, 17 ...	6	6	12	3	1
,, 18 ...	47	1	48	12	3
,, 19 ...	5	—	5	—	—
,, 20 ...	4	1	5	7	4
,, 21 ...	2	—	2	—	—
Totals	244	20	264	47	19

* By Balloon Barrage.

A REAL THOROUGHBRED

The Vickers-Supermarine Spitfire : Its Ancestry and its Evolution

JUST as in animals one talks of thoroughbreds, meaning by that expression the culmination of generations of careful breeding, so in the products of many aircraft firms can one trace the effects of "generations" of consecutive designs. In few British modern types are the traces of evolution more clearly discernible than in the Vickers-Supermarine Spitfire, the single-seater fighter which has caught the public imagination more than has any other type. Spitfire Funds have sprung up like mushrooms all over the country, and the enthusiasm has spread, if one may use the term, like "wildspitfire," even to lands overseas. With so many thousands of people interested in one particular aircraft type, we have thought that an account of the evolution of this famous aeroplane would not be unacceptable to readers of *Flight*.

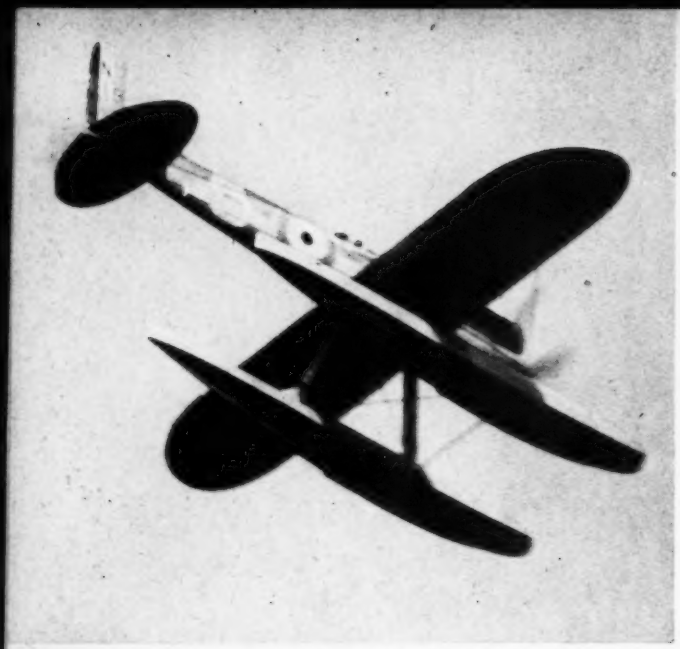
Perhaps one of the most surprising things about this amazing fighter is that it was designed by a man who had not specialised particularly on small fast single-seaters, but whose name had, in fact, been most closely associated with flying boats. Yet it was through these very flying boats that the Spitfire came, indirectly, into being.

From their inception, the Supermarine Aviation Works at Woolston, Southampton, specialised on flying boats. The very first Supermarine, the P.B.1, was a biplane flying boat, which made its brief appearance in 1913. At that time the owner of the concern was Mr. Noel Pemberton Billing. Later he sold his interest to his co-director Mr. Hubert Scott-Paine, who was afterwards joined by Commander James Bird. On their technical staff was a young man who had learned his trade as a railway engineer. His name was R. J. Mitchell, and it was not long before the directors recognised his ability and made him their chief designer.

With the early work of Mitchell we are not so much concerned here, but it is necessary to point out that he

Inchoate efficiency in wood. The S.6, with Napier racing engine, did 226.752 m.p.h. Note that undercarriage as well as wing was cantilever.

A REAL THOROUGHBRED (CONTINUED)

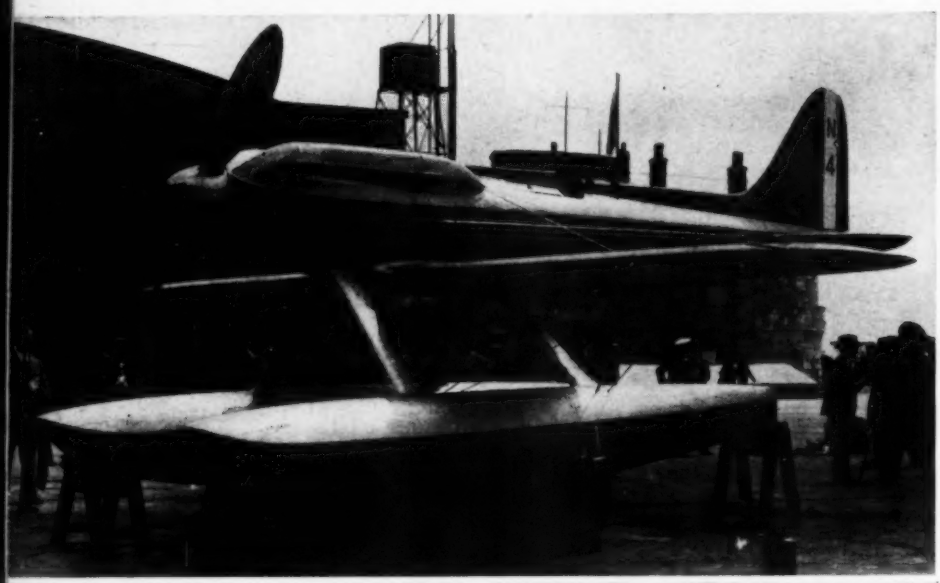


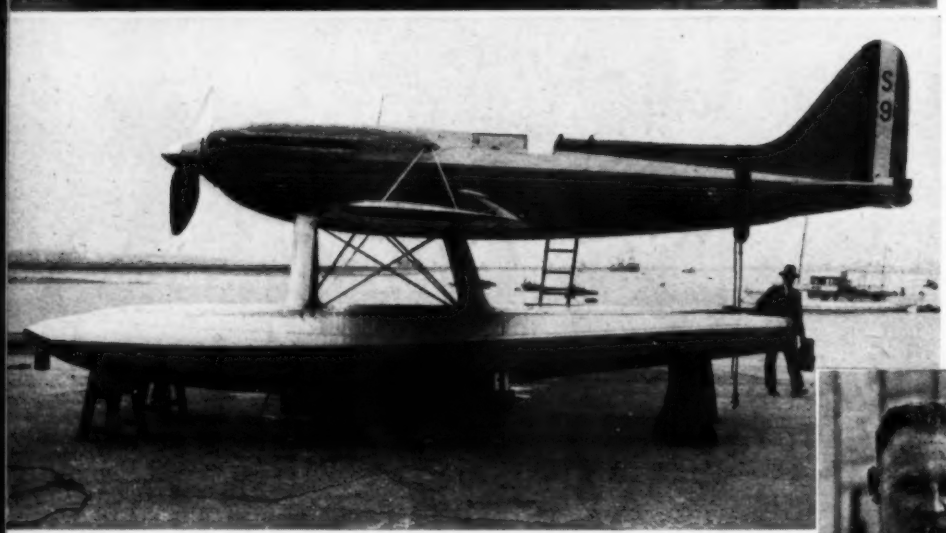
The S.5 also had a Napier racing engine, but was of metal construction. In the Schneider Contest it did 281.54 m.p.h.

produced a number of flying boats. Then, in 1922, the situation of the Schneider Trophy Contest became very grave. Italy had won it two years in succession, and by the rules of the contest she would become the permanent holder if she won a third time. That idea was too much for Mr. Scott-Paine and Commander Bird. At a time when the firm was not doing too well (Government orders were very scarce) they decided to finance out of their own pockets the building of a challenger for the Schneider Contest. It is only mild exaggeration to say that it was this decision which produced the Spitfire. Not directly, of course, but if Henri Biard had not won that Schneider Contest, Great Britain would not have been represented, and there would have been an end of the Schneider. In that case Mitchell would probably never have had an opportunity to design for speed alone, the S.4, S.5, S.6 and S.6 B would never have been produced, and Mitchell might have gone on happily with large service and commercial flying boats, never thinking in terms of single-seaters of any type.

However, Biard did win that Schneider; the Trophy came to England; and a Supermarine did win it outright several years later. It happened in this way: The American Government decided to take a hand in the game, and in 1923 a Curtiss twin-float seaplane with 465 h.p. Curtiss D-12 engine won the Contest at Cowes. It became obvious that something more than steady development was necessary if Great Britain was to have a chance of winning the Trophy. Up till then Mitchell had been content to follow to its logical conclusion the line upon which he had worked hitherto. Cowes may be said to have got Mitchell's back up, and it is to his everlasting credit that he was able to break away completely from a line of thought which he had pursued for a good many years.

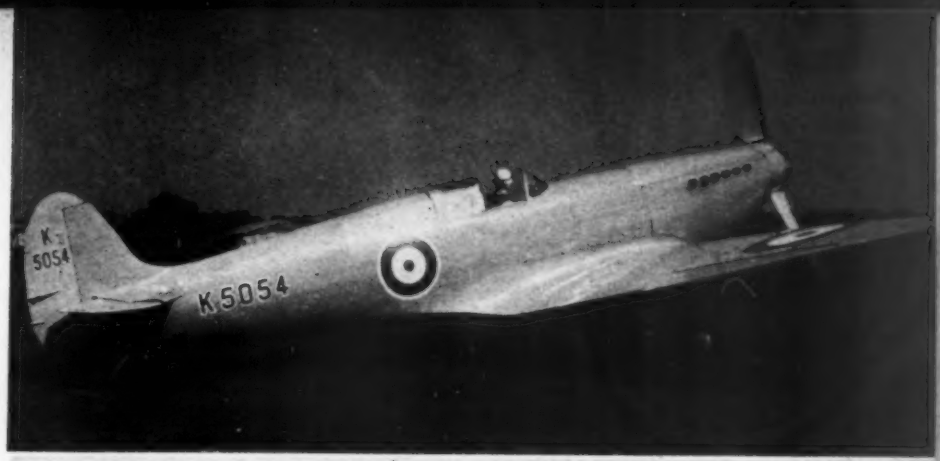
The result was the S.4, which in 1925 established a world's speed record of 226.752 m.p.h. over Southampton Water before going to the Schneider Contest at Baltimore. During a flight there the machine developed wing flutter, a trouble of which little was known at that time. Capt. Biard escaped unhurt, but the machine was wrecked.





In the S.6 and S.6 B Mr. Mitchell used the Rolls-Royce "R" racing engine, and Schneider Trophy speeds went up to 328.6 and 340 m.p.h. respectively. Radiators covered the wing surfaces, fuselage sides and even the decks of the floats. Below: Mr. Mitchell with Mr. Royce.

A REAL THOROUGH-BRED (CONTINUED)



Designed to Air Ministry specification F36/34, the first Spitfire (right) made its first public appearance in June, 1936. It may be compared with the production type below.

If one compares the S.4 with the small pusher biplane flying boats which had been the fastest machines Mitchell had designed up till then, one is amazed at the daring he displayed in his conception of the monoplane. To go from biplane to monoplane may not seem such a great step nowadays, but remember that this was fifteen years ago. And not only did Mitchell go to a monoplane, he went "all cantilever." In spite of the wooden construction employed, the wing was a cantilever of fairly thin section, a natural enough choice in those days of biplane wing sections, when little practical experience was available concerning the properties of thick sections. But Mitchell did not rest content with cantilever wings. He decided to be completely ruthless in suppressing every excrescence which could cut down speed, and the two floats were mounted on steel tubes, cantilever fashion. Apart from reducing drag, this arrangement provided quite a fair amount of springing for the floats. The engine was a special racing version of the then famous "Lion," a twelve-cylinder "broad arrow" water-cooled type. Supermarines had long experience of high-class woodwork in their flying boat hulls, and the S.4 was a beautiful piece of work.

The next step in the evolution of the Spitfire was the fitting of three-bladed variable-pitch airscrews (right). A special cleaned-up Spitfire, with smaller wings and a special Merlin engine, is shown below.

A REAL THOROUGHBRED (CONTINUED)

For the next Schneider Contest, held in 1927, Mitchell designed the S.5. He still made use of the Napier engine, which had been boosted to give even more power than the one fitted in the S.4. Considerable changes were made in the general design, and a very thin metal wing was braced by streamline wires to floats and fuselage top. The 1927 Schneider was won by Flt. Lt. Webster on the S.5 at an average speed of 281.54 m.p.h., and the higher speed was certainly not due entirely to the extra power of the 1927 Napier engine.

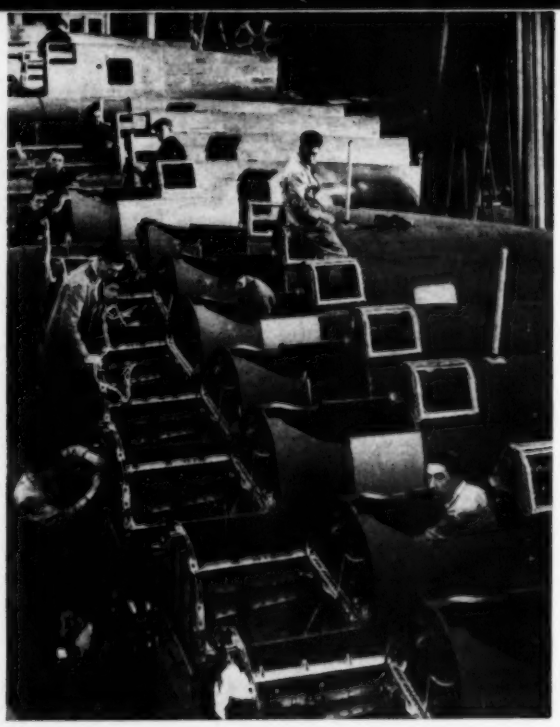
By the time design work had to be started on the next Schneider defender, a new Rolls-Royce engine had become available. This was known as the "R," and was of the twelve-cylinder, liquid-cooled vee type, giving a power of something like 2,000 h.p. This, of course, was more than double the power given by the racing Napier, and such a power plant could not be ignored. Around it Mitchell designed the S.6, which was generally similar to the S.5 in its basic conception, but was a good deal larger. On this machine F/O Waghorn won the Schneider at 328.6 m.p.h. This was in 1929.

For the 1931 contest certain modifications were made to the S.6 design, and the Rolls-Royce engine was persuaded to yield up a few hundred more "horses." Actually it delivered to the airscrew about 2,300 b.h.p. for a weight of 1,630 lb. On one of these machines Flt. Lt. Boothman averaged 340 m.p.h. in the Schneider, thereby winning the Trophy for Great Britain outright.

Schneider to Spitfire

The uninitiated might ask the simple question: "Why could not Mitchell just put a wheel undercarriage and a few guns on the S.6 B, and so have the Spitfire?" That would be a perfectly logical remark, but the complete reply would have to be quite a long one. It may, however, be pointed out here that for one thing the "R" engine was designed for delivering its power for quite short periods only. The fuel necessary for such a large engine would be difficult to house (in the Schneider machines all of it had to be carried in the floats). The radiator surface covered almost the whole wetted area of the machine, and would have made it very vulnerable. The wing would have been too thin to house the eight machine guns. And there are many other reasons into which we cannot go here.

But the designing of the Schneider machines had given the Supermarine technical staff the necessary experience. Thus when, in 1934, the Air Ministry issued a fighter specification (F36/34), Mitchell and his men were ready to tackle it. It called for a single-seater fighter fitted with eight machine guns, and for a duration of about 1½ hours at full throttle. During the three years that had passed since the winning of the Schneider Contest, Rolls-Royce, Ltd., had been at work on a smaller engine, and the F36/34 fighter was designed around this engine. The design work was completed during 1935, and the prototype machine was demonstrated (but only just!) at Eastleigh, Southampton, in June, 1936. Trouble with the oil system cut short a flight which would un-



The Spitfire in production. These three pictures show a few aspects of manufacture and assembly. A vast volume of work is done by sub-contractors.

A REAL THOROUGHBRED (CONTINUED)

Spitfires in the Service. An impressive line-up at a Royal Air Force station.

doubtedly otherwise have astounded the spectators. As it was, the pilot (Mr. Quill) made a masterly approach to the aerodrome at a speed which made us gasp, it seemed so low compared with the top speed; needless to say, he made a perfect landing with a "dead" engine.

Minor modifications were introduced during the next year or two, and the Rolls-Royce engine, which had now become known as the Merlin, had become a really reliable unit. The first production machines were fitted with two-bladed wooden airscrews, as it was the general opinion in those days that the power loading was so low in a fighter that the "stalling" of the airscrew blades during the early part of the take-off would not increase the run unduly, nor seriously reduce the initial rate of climb. However, it became obvious that an improvement *could* be expected from the fitting of variable-pitch airscrews, and gradually these were introduced; first the two-pitch type, and finally the constant-speed De Havilland and Rotol. The Merlin engine also has continued to be improved, so that the combination now gives a thrust horse-power which enables the Spitfire to exceed by a considerable margin the 355 m.p.h. quoted originally. With the Merlin II of 1,030 b.h.p. at 16,250ft., the top speed is about 367 m.p.h. It is, of course, obvious that on 100 octane fuel a considerable improvement in performance is possible.

In designing the Spitfire, Mitchell took his engine, pilot, armament and equipment and drew around them the smallest possible outline. The fuselage is of the stressed-skin type, which gives the smallest wetted area for the contained load. For his wing plan form he approached the theoretically ideal ellipse, and the wing area he based upon what he considered a safe

During the often short periods between raids, the Spitfires are refuelled and rearmed.

A REAL THOROUGHBRED (CONTINUED)

A somewhat sad reminiscence. A Spitfire is demonstrated to a mission of French officers. Coming in to land, with undercarriage and flaps down.

wing loading of 24 lb./sq. ft. in view of the fact that the Spitfire was to operate both as a night fighter and as a day fighter. Doubtless a slightly greater top speed could have been achieved by still further reducing the wing area (in fact, that was done in the special Spitfire built for high-speed research), but events have proved that the extra manœuvrability which results from a moderate wing loading has been well worth while.

While on this subject it is interesting to reflect that on the S.6 B. Stainforth averaged 407 m.p.h. over the measured straight-line course. He had available 2,300 h.p. It thus appears that approximately one-half of that power was absorbed in dragging the two floats through the air. The Schneider machine had a wing area of 145 sq. ft.; that of the Spitfire is 242 sq. ft., so that there was presumably less wing drag on the S.6 B, although the surface radiators must have added a certain amount. Loaded weight has no great effect on top speed, but it may be of interest to mention that the Schneider monoplane weighed 4,560 lb.; the Spitfire 5,900 lb.

Structural Details

The fuselage of the Spitfire is, as already mentioned, partly of stressed-skin construction. It is made in three sections, of which the front portion is a tubular girder carrying the engine. In the wing construction Mitchell departed from the system employed in the Schneider machines. They had two-spar wings because of the wire bracing. In the Spitfire he used a single-spar construction, with the spar placed fairly far back. The nose covering is of heavy gauge and forms, with the spar web, a strong torsion box. Aft of the spar the ribs and covering are of lighter gauge.

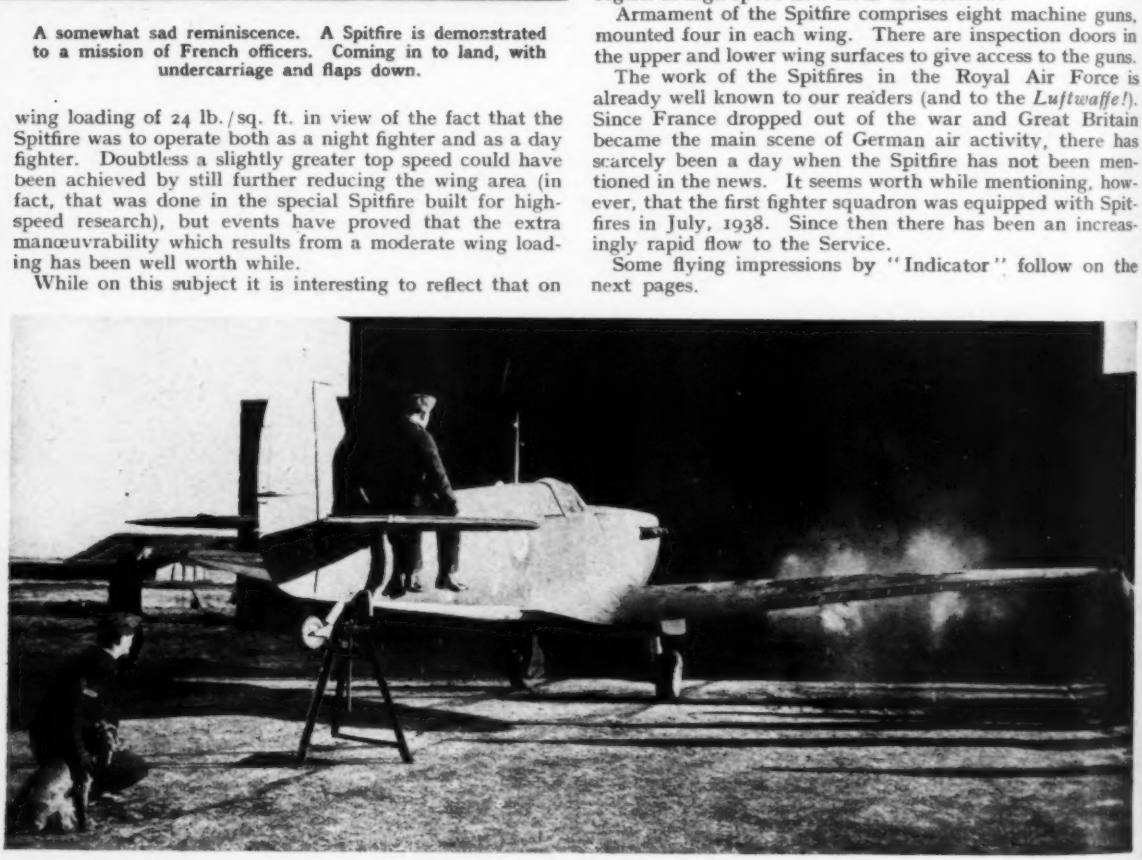
It goes without saying that the undercarriage is of the retracting type, but an unusual feature is that the wheels retract outwards into the wing. The more common arrangement is to retract them inwards.

The Merlin engine is very closely cowled and is glycol cooled. The radiator, which is of the ducted type, is mounted underneath the starboard wing, where it is in a region of high-speed flow from the airscrew.

Armament of the Spitfire comprises eight machine guns, mounted four in each wing. There are inspection doors in the upper and lower wing surfaces to give access to the guns.

The work of the Spitfires in the Royal Air Force is already well known to our readers (and to the *Luftwaffe!*). Since France dropped out of the war and Great Britain became the main scene of German air activity, there has scarcely been a day when the Spitfire has not been mentioned in the news. It seems worth while mentioning, however, that the first fighter squadron was equipped with Spitfires in July, 1938. Since then there has been an increasingly rapid flow to the Service.

Some flying impressions by "Indicator" follow on the next pages.



Testing a Spitfire's eight Browning guns at the stop butts. The concentrated fire is at the rate of close on 10,000 rounds per minute.

THIS is the SPITFIRE

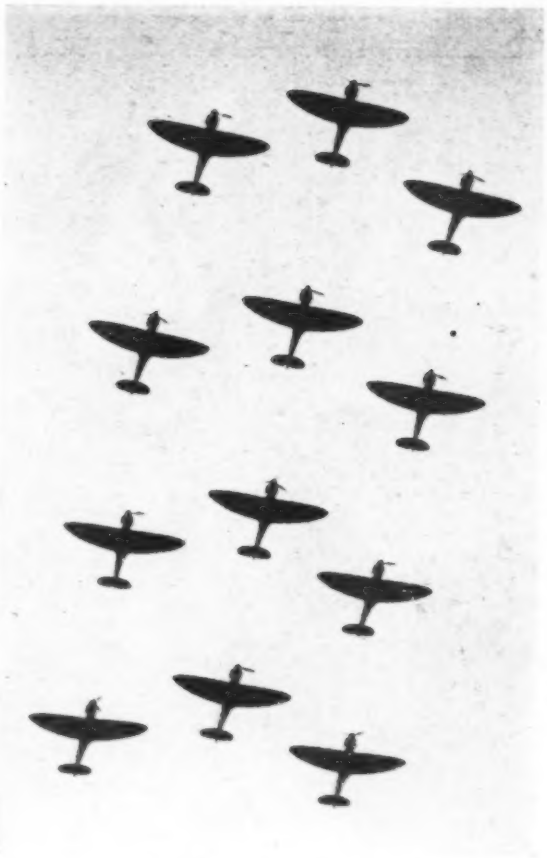
A Good Fighter Can Also be a Good Aeroplane : A Few Impressions of a Very Remarkable Machine

By "INDICATOR"

A FEW days ago I was talking to someone who had seen as much as anyone of the effects of bombing in purely residential areas. He remarked that he was quite amazed at the entire lack of any kind of panic or excitement, and added that the only example of mass hysteria he could quote was the way in which everyone had dashed forward to subscribe to Spitfire funds here, there and everywhere.

In cold blood one might ask: Why not Hurricane and Wellington and Blenheim funds? The reasons are simple. People are interested in the machines which protect them and not in those which attack the enemy in their turn, and they are also taken by the name and the appearance and the performance of this remarkable little fighter—which is all the more remarkable because it is by no means a new type. For once the public has guessed correctly. Knowing nothing of performance figures they have instinctively chosen one particular type as the paragon of protective types, though any pilot will tell them that the Hurricane is equally remarkable in its own particular way. Slower, but more robust, easier to handle on and near the ground, and consequently ideal for work from less well-prepared fields near the front line of any war. A machine, in fact, which has had far less than its due attention from a somewhat fickle public. But there it is, and the public is curiously right, though not quite in the way it imagines.

I've said before, and I say again, that the most important thing one can say about any British military type is that it is easy to fly. However remarkable a machine may be, its value is considerably reduced if it is in any way tricky or difficult. Not only are there likely to be more unnecessary accidents, both while on active service and in training, but there is a considerable lag in its introduction to service because the process of training is longer and more difficult, and because pilots must be more carefully picked. Quite naturally the modern type is complicated and lands at a rather high speed, but I do not think there is one type

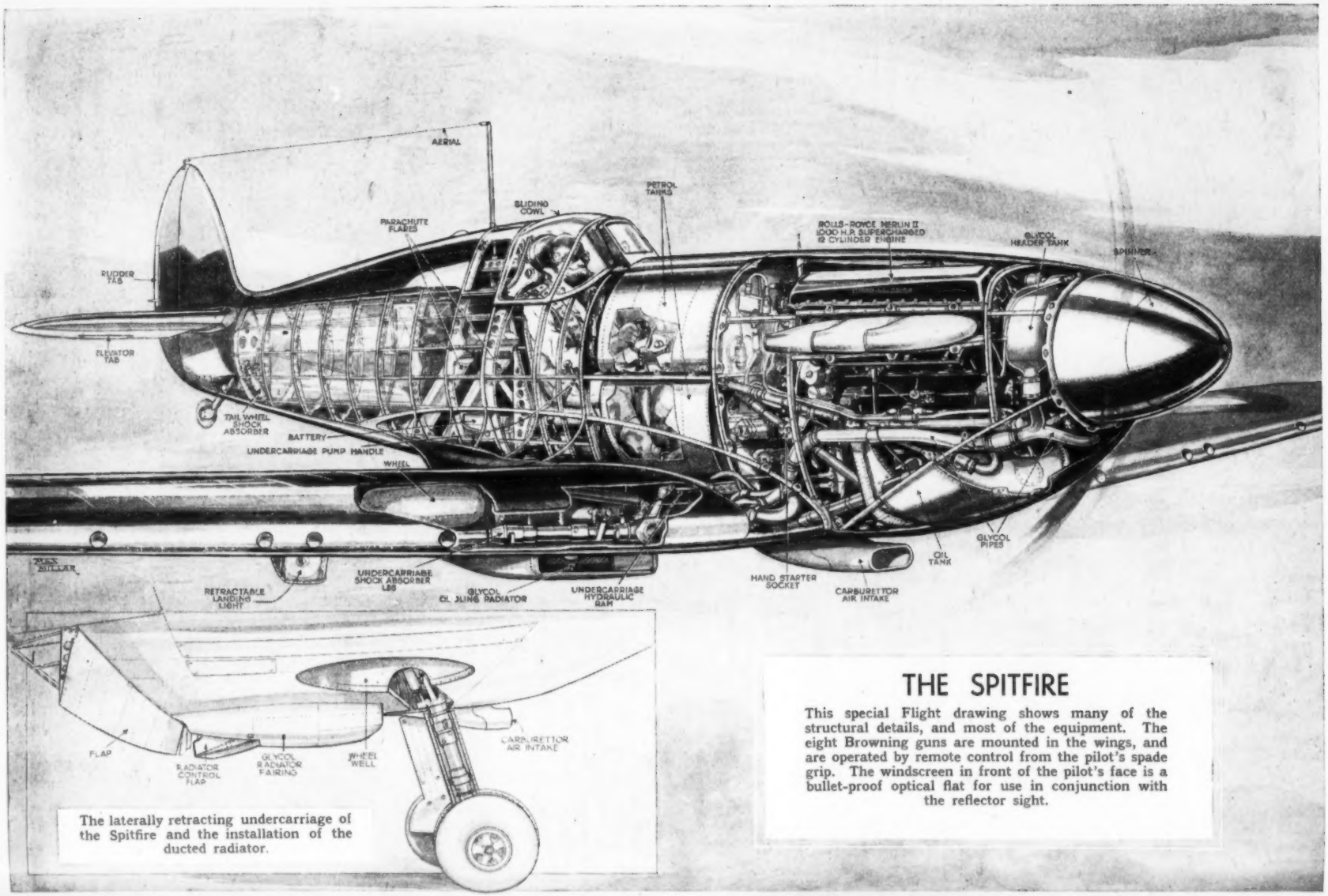


Indicator's views on the nice handling of the Spitfire seem to be borne out by this view of a very fine formation. The characteristic plan form should be noted.

at present in service (or about to go into service) which cannot be handled by a normally competent pilot with a hundred hours in more or less advanced military types to his credit.

And the Spitfire forms no exception to the rule. The various Operational Training Units are proving this to be the case. There are plenty of minor crashes in the early parts of each course, but serious accidents are few and far between. One can watch pupils holding off at quite stag-

The alarm has sounded, and two Spitfires are ready to take off for an interception. These particular machines belong to an A.A.F. squadron.

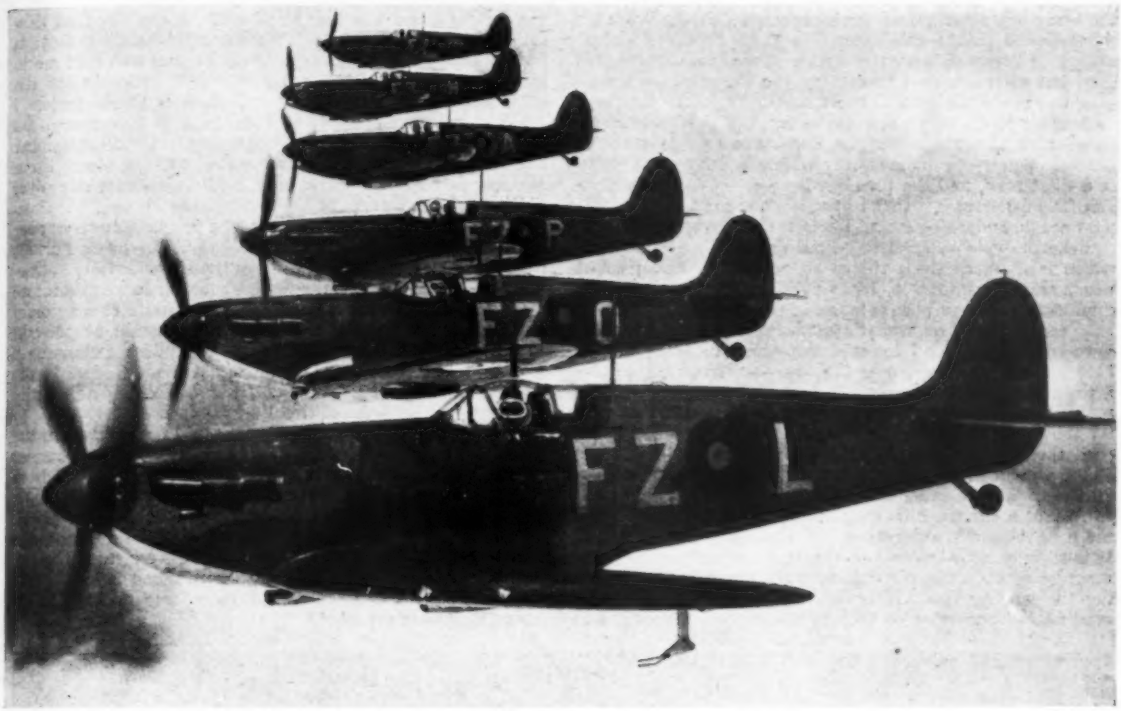


The laterally retracting undercarriage of the Spitfire and the installation of the ducted radiator.

THE SPITFIRE

This special Flight drawing shows many of the structural details, and most of the equipment. The eight Browning guns are mounted in the wings, and are operated by remote control from the pilot's spade grip. The windscreen in front of the pilot's face is a bullet-proof optical flat for use in conjunction with the reflector sight.

THIS IS THE SPITFIRE (CONTINUED)



In "echelon, stepped up." Another fine Spitfire formation. The "White Coon" effect is caused by the framing around the ventilation panel.

gering heights—the Spitfire's comparative blindness during the last part of the approach makes such errors natural to a man making his first solo in the type—and see the machine sink more or less gently into the ground on a perfectly level keel. That in itself proves the excellence of the design; I have yet to see a wing drop after a misjudged hold-off or a bad bounce.

Nothing to Worry About

I confess to having been quite unnecessarily worried while on my way to fly the Spitfire for the first time. Here, I thought, was where I should be found out. In those days all the examples of this type had hand-pump operation for the retractable undercarriage, and two-position airscrews. I remember that the throttle, which had not been properly tightened, tended to come back as I selected "U/C Up," that I waggled the stick backwards and forwards in rhythm with the pumping movements of my right arm, and that I changed pitch rather too early, with the result that the revolutions dropped so far down that I thought something had burst. With all these single-seater fighters the take-off is a somewhat exciting performance, what with natural swing and the torque effect. One usually feels more or less out of control during the first attempt and until the machine is airborne—a matter of about four seconds. With the Spitfire the feeling is slightly accentuated by the comparatively narrow track, which allows the port wing to dig in rather harder as the throttle is opened, while the rudder and elevator are nothing if not sensitive in the slipstream.

One of the prices paid for performance is diminutive size and this means that one must be carefully positioned before an attempt is made to close the little hood. It just fits and the catch is behind one's head—a contortionate business if closing is attempted immediately after take-off with the machine jumping about like a little polo pony. One learns, however, and after one or two trips it is all too simple for words, becoming part of the routine drill to match the raising of the undercarriage and the changing of the airscrew pitch.

That first trip was memorable, too, because I had not previously flown a machine with such a high cruising speed and with such clean lines that this speed is reached very soon after levelling out from the climb. I made a circuit and set off in the desired direction over country covered with a heat haze. Towns and railway lines dashed by, and

Hold your horses! Aircraftmen holding down the tail of a Spitfire while the engine is being run up. On the other end of the lever are the 1,030 horses of the Merlin engine.

THIS IS THE SPITFIRE (CONTINUED)

the first place I recognised was a town some fifty miles from the take-off point—this after less than fifteen minutes' flying. I began to envy the fighter pilots their short-wave sets, but soon got used to moving the thumb up the map at about twice the normal speed and even found time and inclination to execute a few gentle handsprings. Certainly these modern fighters, and the Spitfire in particular, have control *in excelsis*. One simply wishes the machine round in a tight turn, and the turn has been completed, the horizon fallen downwards in its little glass case, and the compass needle is dashing round like a roulette wheel.

Since the machine had to be put down on an aerodrome which is small as these things go nowadays, and part of which was unserviceable, I had asked very carefully about approach speeds and the safe use of the brakes. I brought it in very gingerly off a gentle left-hand turn at 100 m.p.h., lowered the flaps and reduced the speed to 80-85 m.p.h. before motoring quietly over the boundary fence and applying an accidental wheeler. I had been warned not to attempt a very violent three-pointer as there is a tendency for the tailwheel to touch first and for the machine to proceed thereafter in a series of bucking hops. Stick a little back of neutral, wheels slightly before tail—that seems to do the trick very satisfactorily. The Spitfire's only faults consist of a certain blindness as the speed is reduced and the nose rises with a degree of temperament on the ground. It is slightly nose-heavy and the track is narrow, so there must be no excessive playfulness while taxying or completing the landing run. If brakes are used they should be used at the beginning of the run and not at the end, and violent turns on the ground should be eschewed as they should with any machine. With normal handling there is no trouble at all, and I often wish no one had told me to be reasonably careful because one forthwith obtains the quite false impression that the machine is troublesome.

When this war is over and I am back in light aeroplanes—if there are any—cruising at 100 m.p.h. I shall remember one trip in a Spitfire if I remember nothing else. From Hampshire to Cumberland on a glorious summer day, over Salisbury Plain, over the Vale of Gloucester, over the Cotswolds, past the Malverns, past the Black Country, over Shropshire villages, past Liverpool and Barrow-in-Furness and over the Cumberland hills to the silver Solway. One-hour-twenty dead with the Merlin running in weak mixture at −2 boost save for a short glorious minute at maximum cruising boost, in rich mixture and downhill at 300-odd m.p.h. from Scafell to the sea. Forty-five gallons used and that at a generous estimate; not a map opened; the countryside, every minute different, streaming quietly by to the gentle thunder of the Merlin.

It was hot inside, but that heat would be welcome to the pilot looking for something or other at twenty thousand or so, and it made the moment when the speed had been brought down and the lid opened all the more pleasant. A gentle cooling draught, airspeed 100, undercarriage down, flaps sizzling down from the air-bottle, a little motor, the fence goes by, the wheels touch prematurely, touch again, and the boundary comes slowly up as speed is lost. War had produced the Spitfire, but there was nothing lethal about it at that moment.

INDICATOR.

In spite of its high performance, the Spitfire is eminently suitable for, and constantly used as, a night fighter as well as a day fighter

Air Strategy—XXI

AIR BLOCKADE

The R.A.F. Should Have an Air Blockade Command

By CAPT. NORMAN MACMILLAN, M.C., A.F.C.

INVOLVED, as we are, in the urgency of the immediate defence of the British Isles against the air attacks launched from relatively adjacent aerodromes by the *Luftwaffe* against our great cities, it is a difficult moment to see current events objectively. But that is precisely what we must do if the best use is to be made of the resources at our disposal. For it is the long-term planning of the British which the Nazis are endeavouring to smash by the weight of their assault.

Let us analyse the situation impartially. This attitude is essential, for however greatly our emotions may be aroused, victory for British arms will not be achieved by permitting such feelings to affect our judgment.

The most significant public statement which has been made upon the war was made by the Prime Minister, Mr. Winston Churchill, in the House of Commons on the night of Tuesday, August 20. It ought to be printed and hung upon the walls of factories and offices, Ministries and barracks.

This was the paragraph.

"Even if the Nazi legions stood triumphant on the Black Sea or, indeed, upon the Caspian, even if Hitler was at the gates of India, it would profit him nothing if at the same time the entire economic and scientific apparatus of German war power lay shattered and pulverised at home."

This statement, besides offering in these days of immediate peril, a vista upon which to direct the mind, indicates a course of action. And there cannot be the shadow of a doubt that that action must derive from the mainspring of British strategy. Else, whence can it come?

Whatever may befall, upon whatever front, there is for the British strategist, in this war, but one bull's eye. It lies in Germany.

Axially Speaking

Italy, and the Italian forces disposed about the Italian Empire and in British Somaliland, form a planetary system to the German sun. Without the war heat of its solar centre the martial ardour of that planetary system would swiftly freeze.

A defeated Germany must mean a defeated Italy, but the converse will not necessarily immediately be true.

To understand the full value of the statement it is essential to understand something of the organisation of the Nazi system. One of its assets is its efficient handling of decentralised units. The leaders of decentralised units are given a great measure of executive power whenever they are cut off from the parent executive in Germany; but when they form direct links with Germany the executive power changes to an administrative function. This occurred in the Sudeten territory and in Danzig; to a lesser degree it befell in Austria and Norway; in a slightly different way it has happened in Roumania.

Thus it is clear that the Nazi system, in practice, is an inelastic edifice. That is why it must be built of such granitic material. And it is not for nothing that the Nazis have been trained to chant their loyalism about One Reich, One Folk, One Leader. They chanted it in Austria, in Sudetenland, in Danzig before these territories were incorporated in the Greater Germany. Thus it was plain, before the event, that the Nazi leaders in each distinct territory wielded their authority over their followers only for as long as they remained unincorporated in the Reich. The chanting of their own followers sounded the termination of their overlordship as soon as the end for which they strove was gained.

This submission of personality to central authority vested in an individual is a German characteristic. It explains their apparent docility, their love of discipline, their joy in the wearing of uniform at all times. And it betrays the weakness of the organisation—if weakness there be.

Two Theses

Thus there are only two theses: One, that the Nazi organisation is so strong (yet inelastic) that it is unbreakable by force of arms; Two, that the first thesis is false.

It must be conceded that many Germans must regard Hitler as a leader possessed of theanthropic properties. But this adds no strength to the organisation which Britain faces to-day. If the temple of Nazidom can be broken that very quality in its followers will dissolve their spirit of resistance with greater speed.

Whichever thesis is correct the way is clear. It is that Germany itself is the target from which nothing must deflect the aim of British strategy. And whatever strength we can spare from the primary work of immediate defence of the British Isles, and the holding of the Italian drive in Egypt and the Sudan, must be directed against Germany without remission.

I forecast in these pages a few weeks ago that the increasing imminence of the German preparations to attempt the invasion of Britain would cause us to devote a large part of our bomber strength to the attack of objectives of immediate military importance in the areas of German military concentration. This proved true. The reports of the regular attacks upon the German factories night after night, in the Ruhr and on the Rhine and in other parts of industrial Germany altered to reports of attacks upon barge concentrations, Channel ports, railway junctions feeding from Germany to the Channel coast; yet occasionally there has been the opportunity to maintain a smaller scale of attack against targets of the former kind, on the outskirts of Berlin, in Bremen, in addition to the invasion-countering bombing of the ports of Hamburg and Bremen.

It would appear, therefore, that the blockade of Germany from the air has been eased by the pushing forward of the German's anti-British campaign preparations along the Channel coast. This is true. But it is a truth which needs amplification. For there is in what the Royal Air Force is doing in its bombardment of German concentrations a definite retrospective value.

All the material which is damaged in the raids against enemy concentrations ranged for the intended attack against Great Britain has had a productive value. Instead of blockade by attack at source, this process is in the long run (bearing in mind the dictum that the source

AIR BLOCKADE (CONTINUED)

of German power lies in the German economic and scientific apparatus within Germany) as effective. For our attacks against German factories began lamentably late in the war, and a vast store of war material was unquestionably built up both before the war upon Poland was begun by Germany, and since, during the quiet months which Britain and France permitted Germany to enjoy. The rapid course of events, succeeding one another with such momentum, in Norway, Holland, Belgium and France, made it imperative for us to concentrate most of our aircraft against the field forces of the enemy until the collapse of France brought those activities to a temporary cessation; then only was it possible for us to begin the true air blockade which ought to have been initiated from the very day that war was declared and while Germany yet had many fields to conquer before she could turn her full strength upon us. For that failure we are now paying a heavy price. But the bombardment of the concentrations which Germany has brought into range against us is in a way a retrospective blockade; we are, in fact, destroying at their advanced bases stores and munitions which were, no doubt, manufactured in the German factories during the months before our blockade began. And to replace the stores so destroyed, it is necessary for the damaged factories of the Reich to strive to regain their output so that the losses can be made good. Hence the need to bombard the lines of communication leading from the Reich to the Channel ports. Every ton of stores and munitions destroyed by the bombs of the R.A.F. at the advanced striking bases of the German army demands the replacement of the ton lost by another ton, which must be sent by rail, road or canal; if that ton, too, can be destroyed, another ton must be forwarded. And for every one of those losses the factories of the Reich must work.

First Things First

Recently I wrote that in the strategy of air blockade it was wise to damage the factories first, then to damage the major stores concentrations, and finally to attack the advanced lines. The loss of stores and equipment at the front must send a chain of demands in action, through the advanced stores to the base stores, and thence to the damaged factories through the department responsible for supply. In past wars it has been customary to make a frontal attack against troops to produce the process of wastage. That was unavoidable, for there was no other way to go about the process. To-day, the aeroplane has changed the process. The factories are bombed before the troops go into action. Some of the reserves which are built up are destroyed before the battle begins. In the effort to force a quick issue the onslaught will follow with a fierceness which will consume stores at a rate never before known. Consider only (if nothing else) the consumption rate in anti-aircraft shells, which has no parallel in past wars. But what is far more important is the consumption of man-hours. Nothing which is used in war can be used without infinite labour, toil far more continuous and exacting than any which is ever demanded of man in times of peace, for not only is everything wanted more quickly because it is used up faster, but its transportation is more difficult, and even when it reaches its destination it has to be stored under conditions which will safeguard it from attack as far as is conceivably possible. At every stage of the process, from producer to consumer, war stores require far more energy and much longer man-hours to be expended upon them. Anything which can add to the strain of the workers is undoubtedly (cruel though it may be) an advantage to the side imposing it. For that reason it is imperative that the strain which has been imposed upon German workers shall not be eased more than is absolutely necessary, especially as the German strain upon British workers has been recently intensified by the large-scale raids by day and night. Even if it is not possible to send large formations, small formations, even single machines, should be sent to attack the most widespread blockade targets within Germany night after night. For if this is not done (owing to the exigencies of the immediate situation) the damage already inflicted will be repaired as far as possible while the personnel will have time to recover some of the nervous energy which was expended. Moreover, in those factories which have not yet been attacked work will proceed at a redoubled speed. And, in addition, the German propaganda machine will tell the German workers that the *Luftwaffe* is protecting them from British air attack and they will believe the story—for the time being! But, for the time being it will be a soporific which will help the German army and run counter to the welfare of the British army in the days which lie ahead.

Continue Attacks on Germany

So I repeat what I have said before in these columns, that it is essential, whatever the situation may be, to maintain a definite force, no matter how small it may have to be to begin with, which shall have for its object the application of air blockade to Germany direct. Nothing must be permitted to deflect this force from its primary task. Nothing. For there lies the road to victory. And the farther we travel along that road the harder it will become for the German army to execute the threat of invasion of Great Britain with hope of success.

Great indeed is the responsibility of those who to-day have to decide the allocation of Britain's air strength—to face the Italians, to face the German air assault against Britain, to attack the places of concentration of the German forces massing for the assault upon the British Isles, and to attack the areas in the rear of the Italian forces. But, however pressing those responsibilities are, they ought not to be permitted to absorb for their absolution the whole strength of Britain's bombing forces.

New Command Needed

A new and separate Command is desirable so that the principle of air blockade can be upheld. This Command of the R.A.F. should have for its sole duty the planning and execution of the air blockade of Germany and Italy. Whatever happens elsewhere, this duty should be discharged unremittingly, as is the convoy escort work of the Royal Navy. Nothing can deflect a portion of the Fleet from that task, which is to break the German and Italian attempts to blockade this country. Similarly, nothing should deflect the R.A.F. from utilising a portion of its bombing fleet for the purpose of real counter air blockade. The bombers of a separate Command should go out upon their acronychal missions to destroy the strength of the enemy at its source in the lands of both. If in the days when the war was waged over the land of France we needed a Bomber Command, a B.A.F.F. and an A.A.S.F., we certainly need to-day an A.B.C. of the R.A.F.; and those initials stand for Air Blockade Command.

In saying this I do not disparage in any way the magnificent work of the Bomber Command ever since the

beginning of the war. All the evidence shows that the work of the Command has been absolutely first class, in its planning and in its execution. But that is not the point.

In the hard times which lie ahead of us there is enough and to spare for one Air Officer Commanding to undertake the counter measures which must be carried out against the armed forces Germany has prepared to use against us.

If two separate R.A.F. forces are required to deal with this enemy force (I refer to the Fighter and Bomber Command) it is obviously desirable to separate the duties of the Bomber Command so that they are as simplified as are the duties of the Fighter Command to secure the attainment of that one objective.

The only way in which this can be done is by the separation of the intricate duties of air blockade bombing and those of counter-attack bombing. Their separation would insure the maximum effort being put into the direct operations against the German forces; and at the same time provide that the air blockade measures, which are needed to help to bring about the "pulverisation of the economic and scientific apparatus of German war power at home," are maintained energetically by a force organised for no purpose but the direct application of the war of air blockade against Germany (and Italy).

NEW AMERICAN ENGINE SCHOOL

AT East Hartford, Connecticut, the United Aircraft Corporation has just opened a school for the instruction of customers' personnel. Known as the Pratt and Whitney and Hamilton Standard Engine and Propeller School, it offers modern and extensive facilities for familiarising the users of United Aircraft products with their design, operation and maintenance, and for informing them of latest developments. The school is one of the few of such a type in the world, though in this country the De Havilland Technical School is an outstanding example, being organised to give short or complete courses on the technical side of aircraft manufacture and design

At the present designed to handle about 15 so-called "students" at a time, the United Aircraft school is under the supervision of Major Walter E. Richards and occupies an area of some 1,800 square feet adjoining the Pratt and Whitney factory. Here is located an extensive array of equipment for instruction in engines, airscrews and accessories by men having a background of long experience with these three elements of aircraft operation.

Customers' personnel, including maintenance mechanics from the airlines and the military services, may receive instruction on at least five types of Pratt and Whitney engines, including the Wasp Junior, Wasp, Hornet, Twin Wasp Junior, and Twin Wasp, as well as on Hamilton Standard Hydromatic and constant speed airscrews. In addition, instruction is available on standard engine and propeller accessories.

Emphasis is placed on individual attention in the school, and instructors are on hand to explain the current methods of operating and maintaining aircraft equipment. The curriculum is both elastic and inclusive, enabling students to secure all the necessary and desired information in a minimum of time. Some members of the first class, which is already under way, have enrolled for a week, others for two months. Some are specialising in a study of Twin Wasp engines and Hamilton Standard Hydromatic airscrews while others are working along more general lines.

Work at the school includes actual assembly and disassembly of engines and airscrews with the help and supervision of company experts. In addition, periodic lectures are given on both general and special topics. To supplement the material presented in these sessions, complete files are available of all the material published on the subject studied, and tours are conducted once a week to special sections of the engine and airscrew factories where students may observe relevant factory procedures.

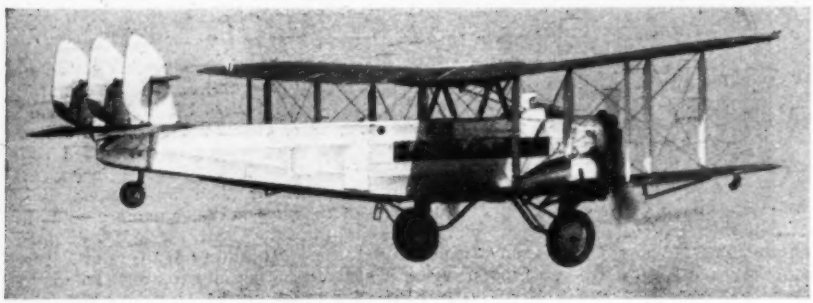
It is usual to spend three periods a day on assembly and disassembly, one in lecture, and one period on accessories. Special additional lectures are given at the students' request.

The new school is the result of five years of development. It began on a small experimental basis back in 1935, when a space 30 × 27 feet was set aside for a school at the company's airport hangar. In the ensuing year it rolled up an impressive list of 83 students from 17 foreign countries, as well as many representatives of domestic users of United Aircraft products. Now on a permanent and enlarged basis, the school already has four Venezuelans, two Colombians, two Iranians, two Siamese, and a student from the Philippine Islands scheduled for enrolment in the immediate future.

SHEEP IN WOLF'S CLOTHING. A present day pastoral scene frequently met with in the South-Eastern corner of Great Britain.

TWENTY CIVIL YEARS

A Famous Firm Looks Back : Commercial Success from the Start : Supplying the Empire With Commercial Aeroplanes



The D.H. 34 carried ten passengers at 105 m.p.h.

The D.H.66 (Hercules) had three Bristol Jupiter engines.

ON September 25, 1920, the De Havilland Aircraft Co., Ltd., was registered as a private company, with a capital of £50,000. The registered address was Stag Lane Aerodrome, Edgware, where an aerodrome of 76 acres was rented from the London and Provincial Company (Warren and Smiles). First directors of the new company were: Mr. Arthur E. Turner (chairman), Capt. G. de Havilland (technical director and chief designer), and Capt. C. C. Walker (chief engineer).

Most of the technical staff of the new firm had worked together as a team with Mr. Holt Thomas's old Aircraft Manufacturing Company, Ltd. When that concern was wound up, these few got together and founded the new company under their old chief, Capt. de Havilland. Among them may be mentioned Mr. F. T. Hearle, who had been associated with de Havilland from about 1908. He became works manager. Mr. A. E. Hagg became assistant designer, and Mr. F. E. N. St. Barbe became business manager.

Of the numerous successful machines designed by Capt. de Havilland for the old Airco, this is not the place to write, as we are concerned only with the De Havilland Aircraft Co., Ltd., but it may be recalled very briefly that during the war 1914-18 he produced such famous types as the D.H.1, the D.H.2, the D.H.3, the D.H.4, the D.H.5, the D.H.9, and the D.H.10. All of these took a useful part in the war 1914-18.

The new company was largely founded on the strength of an order worth some £2,500 handed over to it when the Airco firm ceased operation. However, during the first year work completed amounted to £32,782, and the net profit was £2,387. Encouraged by this success, it was decided at the annual general meeting in December, 1921, to purchase the freehold of Stag Lane aerodrome, buildings, and plant, for £20,000.

Foreseeing that there would be a demand for civil aircraft, the company decided from the very beginning to specialise on this aspect, and to what extent the De Havilland Aircraft Company, Ltd., has succeeded in establishing its name throughout the Empire the whole world knows. During 1921-22 the capital was increased to £29,413. The outstanding success of that year was the D.H.34, a cabin biplane with Napier Lion engine. In this machine Capt. de Havilland went as far as he dared in the matter of wing loading in order to get high cruising speed. The actual figure was 10.5 lb./sq. ft., which rather makes one smile now, but it must be remembered that the biplane wing sections used had a low maximum lift coefficient,

THE BOARD OF DIRECTORS OF THE DE HAVILLAND AIRCRAFT CO., LTD.

A good team. (Left to right) Mr. F. T. Hearle, Mr. W. E. Nixon, Capt. G. de Havilland, Capt. C. C. Walker, Mr. F. St. Barbe and Mr. A. S. Butler

TWENTY CIVIL YEARS (CONTINUED)

The first Moth. It was "KT" which established the wonderful reputation of the type. Below is the modern Moth Minor.

and there were no high-lift devices. The machine carried ten passengers on a single 450 h.p. Lion at a cruising speed of 105 m.p.h., so that it was a very economical outfit. It was used by Daimler Hire Airways and by Instone Air Lines. During 1922 Mr. Hearle was made a director of the company.

The most successful machine produced in 1923 was the D.H.50, a small cabin biplane with Puma engine. One of these machines gained 999 points out of a possible 1,000 in the competition at the Gothenburg Aero Show. Sir Alan Cobham, as he later became, did a lot of flying in the type, often with Sir Sefton Brancker as passenger.

For the Lympne light plane trials in 1923 the D.H.53 was produced. It was a very nice little single-seater with motor cycle engine, but not the De Havilland idea of what a light plane for the private owner should be. That came along the next year, 1924, when the D.H.60 "Moth" was produced. This was a two-seater biplane with 60/70 h.p. Cirrus engine. The first machine bore the registration letters G-EBKT, and established the reputation of the Moth. Its introduction made the establishment of light plane clubs possible, and for many years it was the standard club training type. It also became popular as a private owner's type.

By 1926 it had become obvious that there was a good deal of business to be done in Australia, and a branch was opened there. At home the year was marked by the introduction of the D.H.66 *Hercules*, a three-engined commercial aeroplane with Bristol Jupiter engines, built for Imperial Airways. This was the largest commercial aeroplane built by the firm up to that time.

So rapid was the expansion of private flying that by 1927 there were 42 private owners of Moths, and 62 Moths were on order at the end of the year. In that year, too, it was decided to engage on engine manufacture, and the Gipsy I was produced. A special racing monoplane, the Tiger Moth, was designed for it, and it established a world's speed record of 186 m.p.h.

The year 1928 saw the company made into a public company, and the Canadian subsidiary company was also formed in that year. During the twelve months no fewer than 336 aircraft were delivered, and engine production rose to 20 per week.

During the next few years many important events occurred. The inverted Gipsy engine was introduced, Hatfield Aerodrome was acquired, and the Puss Moth monoplane made its appearance. Then came the depression years, during which the Tiger Moth biplane was produced. In 1931 Mr. Nixon, secretary of the company, was made a director.

The Tiger Moth is being built in large numbers for training.

In 1932 the Fox Moth came into being. This was a tiny cabin biplane for pilot and two passengers, intended for taxi service. It was probably one of the most economical aeroplanes ever produced.

Following the years of depression, during which, as a member of the staff used to express it, the De Havillanders drank "cooking beer," came a boom period, and 1932-33 was described by the firm as a most successful year. Stag Lane was sold for £105,000, leaving room for the factory only. In that year the Dragon was produced for Hillman Airways. This was designed for very economical operation, as Hillman was

TWENTY CIVIL YEARS (CONTINUED)

The original Tiger Moth was a racing monoplane, fitted with the first Gipsy engine.

not subsidised and had to make passenger-carrying pay out of fares. In that year the London Aeroplane Club, which had had its headquarters at Stag Lane, moved to Hatfield. The Leopard Moth, a development of the Puss Moth, was introduced.

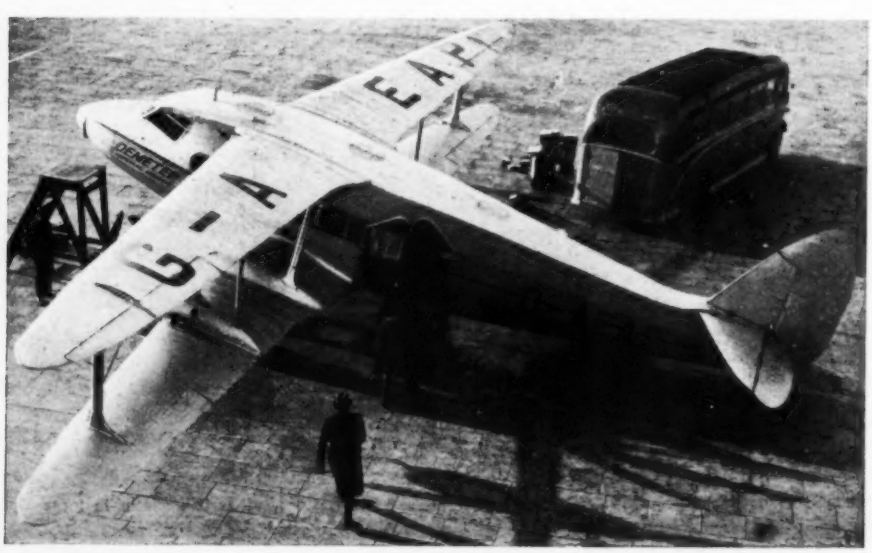
In many ways the year 1933-34 was an eventful one in the history of the De Havilland Company. The Comet was produced for, and won, the England-Australia race. Designed for maximum possible speed, while conforming to I.C.A.N. regulations concerning take-off and climb, the Comet was one of the most efficient aeroplanes ever designed. The same year saw the production of the first De Havilland four-engined machine, the D.H.86, with four Gipsy Six engines. It was characterised by very tapered biplane wings and small wing area. At the other end of the scale there was the Hornet Moth, a two-seater biplane with tapered wings. This got the somewhat undeserved reputation of "dropping a wing tip," and the square-tipped Hornet was introduced to take its place. In 1934 the licence to build Hamilton v.p. airscrews was acquired.

The history of the De Havilland Aircraft Co., Ltd., from 1934 onwards will still be so fresh in the minds of our readers that there is little need to go into great detail. It is, however, of interest to recall that in 1935 the capital of the company was increased to £600,000, and Messrs. St. Barbe and Hagg were made directors. The additional capital was needed to finance the vast amount of work undertaken. The airscrew business was flourishing, and larger and larger types were being developed. The engine side also was expanding rapidly. In addition to the Gipsy IIs and IIIs there was the Gipsy Six, which was followed by the Gipsy Twelve, which might be said to be virtually two banks of the Six on a common crankcase.

A *Busy Year*

On the aircraft side there was large output of Tiger Moths, Hornet Moths and Leopard Moths. The D.H.89 Rapide, with two Gipsy Sixes, was, so to speak, the modern equivalent of the Dragon, but, of course, with much higher performance. Large numbers of the 86 were being supplied, and of more modest claims but with the same high quality in its class was the D.H.90 Dragonfly.

Although the Comet had been designed as a racer, there was much in its design which could be applied to a commercial aeroplane, and it may be said that the D.H.91 Albatross was the logical result. This machine was an attempt to bring into one design everything which could make for efficiency. The fuselage was a perfect streamline shape; the wing was small and of very thin section; the Gipsy Twelve engines were mounted well ahead of the wing, and had ducted air cooling; the undercarriage retracted, and trailing edge flaps gave a high lift coefficient.



Structurally, the 91 was of exceptional interest in that the fuselage had a padding of balsa wood between two outer layers of plywood, the balsa not only being part of the structure but serving also as sound-proofing material. The wing had double-diagonal planking laid on in narrow strips. Certain teething troubles were experienced with the earlier machines of the type, but these were overcome, and the Albatross did good work for Imperial Airways, making several trips in record time between London and Paris, which was the testing-out route for the type.

Following the De Havilland types through in numerical (which is

Both products of 1934. Above, the Comet which won the England-Australia Race. On the left, the D.H.86 commercial biplane.

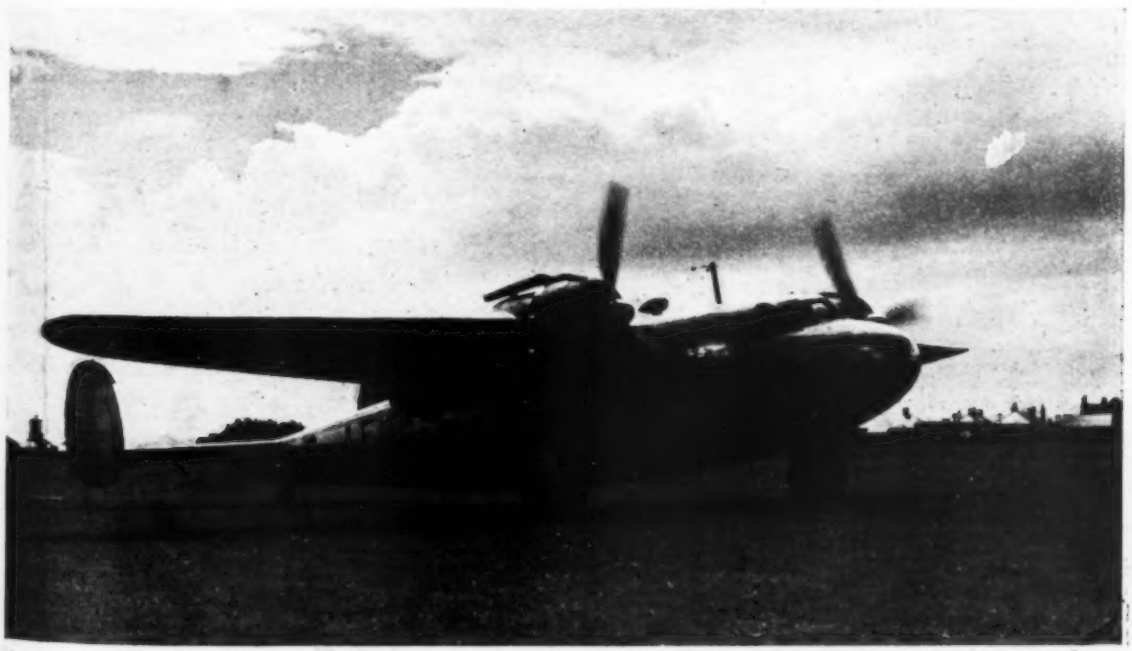
TWENTY CIVIL YEARS (CONTINUED)

Real Commercial aviation. On the left, the Dragon designed specially for Hillman Airways, and below the Albatross.

not necessarily the chronological order), there was the D.H.93 Don trainer with Gipsy Twelve engine, the D.H.94 Moth Minor, an open two-seater, low-wing monoplane with the little Gipsy Minor engine, and, finally, the D.H.95 Flamingo, a high-wing monoplane with two Bristol Perseus sleeve-valve engines. The 95 was the first all-metal aeroplane to be produced by the company, and as such was of more than passing interest. The construction was fairly simple, and may be said to be the translation of wood construction into metal.

Some months ago the De Havilland Aircraft Co., Ltd., acquired a controlling interest in Airspeed, Ltd. This was a logical development, as both firms have specialised on trainer aircraft, the D.H. company on Tiger Moths and the Airspeed firm on Oxfords. Incidentally, the transaction brought back into direct connnection with the De Havilland firm Mr. Hessell Tiltman, who was on the D.H. technical staff for some years until Airspeed was founded.

By way of conclusion to these reminiscences, it may be pointed out that racing and demonstration flying were strong planks in the De Havilland "platform." There was scarcely a flying meeting at which the firm was not represented. Perhaps that was natural in view of the fact that the founder, Capt. Geoffrey de Havilland, continues to fly his own machines. Most of the directors are pilots, and at the present time Capt. de Havilland's three sons, Geoffrey, Peter, and John, are in the employment of the company as pilots. One year Capt. de Havilland won the King's Cup air race on a Leopard Moth, a win which was exceedingly popular not only at Hatfield but throughout the British aircraft industry, where Capt. de Havilland is greatly loved for his quiet, unassuming modesty, a modesty which worldly success has been quite unable to spoil.



First all-metal De Havilland machine. The Flamingo commercial monoplane is also used by the R.A.F.

CORRESPONDENCE

The Editor does not hold himself responsible for the views expressed by correspondents. The names and addresses of our writers, not necessarily for publication, must in all cases accompany letters

THE BOCHE "BEAT"

Easily Identified by Trained Ear

I READ with interest your editorial and letters on the Boche "Beat," as I have been in upwards of 150 raids, and have heard Junkers 88s, Heinkel 111s, Messerschmitt Jaguars, 109s and 110s, plus many too high for identification.

My experience is that I can tell any twin-engined E.A. by the beat—a "whrroom, whrroom" not unlike that emitted by the old "Southampton" flying boats. The sound is altered, but not unrecognisably, when they are in formation.

But the only unmistakably alien sound from the Me 109s is the rattle of their m.gs. and the pop-pop-pop of their cannon.

In this area one quickly develops an ear for the enemy which often identifies them as such before the guns open fire or bombs drop, with or without sirens. A. McKEE.

SOUND OF ENEMY AIRCRAFT

Deliberate Desynchronisation

AMONG possible reasons for the desynchronisation of German bomber engines, I should like to suggest:—

(*a*) The r.p.m. of one engine is deliberately slightly increased in order to avoid the rudder bias normal in twin-engine machines with both engines rotating in the same direction.

(*b*) If the desynchronisation is not deliberate it implies inaccuracies or defects in either engine or airscrew, or in the case of constant-speed airscrews, in the governing mechanism.

(*c*) In circling flight with both engines at the same throttle setting, and both airscrews at the same pitch, there will tend to be a slight difference in r.p.m.

There remains the possibility that the beating is done deliberately, but for a non-technical reason, namely, to create a sort of signature tune. This would be a typical piece of Nazi childishness. J. LOCKWOOD TAYLOR, D.Sc.

London.

PARLIAMENTARY AVIATION

Importance of the Export Trade

I HAVE read with considerable interest Mr. Shackleton's "Random Notes on Parliamentary Aviation."

I think that Mr. Hubert Beaumont's question is useful, for after all, it has provided an opportunity for a further display of Mr. Shackleton's humour, for which we are all grateful; it has also provided an opportunity for a further airing of the question of the export of civil aircraft during wartime, and will undoubtedly in consequence cause many people to stop and ponder on a matter which is receiving far too little consideration. So thanks to Mr. Hubert Beaumont.

Mr. Shackleton has doubts as to the value of Parliamentary questions, but I feel, on the other hand, that one of the most useful things that ever happens in Parliament is the asking of questions. It will be a sorry day for the British Empire when the liberty of the Members of Parliament to ask questions on every conceivable subject under the sun is curtailed.

Like Mr. Shackleton, I have had firmly fixed before me since the commencement of the war, the importance of maintaining the export of civil aircraft, but many people seem to think that the making of civil aircraft and their export is almost an indecent occupation when the country is at war. This unthinking attitude is a curious one, which arises through a complete misunderstanding of the whole situation. The aeroplane is, after all, only a piece of merchandise, like a ship which carries our cargoes, the motor car we export, the bale of fabric, or any other commodity.

After the war, the whole of the aircraft industry will be very hard put to it to know how to employ even one per cent. of the present people working in that industry. Consequently, some provision should be made for that time. There are many countries friendly, associated, or members of the Commonwealth who need civil aircraft for a variety of purposes, and there is still capacity in this country to provide their needs. We should create the habit now among these good customers, to look to this country to satisfy their needs for civil aircraft.

Habit is a great and powerful influence. If we allow the habit of thought and practice to become a conviction that for all civil aircraft America is the only source of supply, then after the war no amount of entreaty on a pseudo patriotic basis or on the grounds of the recognition of services rendered will be of the slightest avail against the firmly established habit.

We are certainly going to win the war, therefore it is foolish knowing that, to throw away the peace; we did that last time. The British aircraft industry after the war, in the civil field, can become a very great and useful industry and fulfil a very vast section of the world's requirements. We shall have all the knowledge, technique, manufacturing facilities and trained personnel to produce the aircraft needed. Is this all to be thrown away through lack of forethought? I hope not, and I venture the opinion that many of those who are most critical of any effort made to keep alive the export of civil aircraft at the present time, will be the very first people to squeal when the peace comes and there is no employment for them. Mark my words, they will be the first to charge those they have done their best to hinder, with lack of foresight in the guidance of one of the potentially great industries of this country.

Would that there were more of Mr. Shackleton's vigorous, creative mind and fewer of the negative mind that wants to stop everything and damn everything, on the plea that there is a war on. E. C. GORDON ENGLAND.

Feltham.

DEEP SHELTERS

Warmth and Sleep for the War Effort

I WISH to add my voice to the increasing demand for deep shelters. It is not only to avoid the risk of being blown to pieces or buried in brickwork, but to obtain sleep. If we are going to keep working for the war effort we must sleep, and in a state of mental tension this is impossible for most people.

The Conservative Government was told—especially by Left Wing people—long before the war started that the deep shelter was the only way to counter air raids and there was plenty of evidence from the Spanish catastrophe. Brick surface shelters are completely futile and have only one advantage over our houses—they will not burn. If they are blown down and fall on us they will crush us to death just as surely as a house will. STRUCTURAL ENGINEER.

FLYING SEARCHLIGHT

Support for Suggestion

I WAS very interested to read your correspondent's letter on the subject of flying searchlights, which appeared in your journal's issue of the 12th inst.

I take the opportunity now of endorsing as soundly practical the scheme propounded by Mr. G. A. Simmonds.

I will go further. I maintain that a suitable searchlight aircraft is at hand, in the shape of the Handley-Page "Hampden," by reason of its fuselage construction.

This aircraft could be equipped with *two* searchlights, above and below the fuselage, the topmost light having an almost uninterrupted field of 360 deg., plus mobility for vertical operation. The lower light would operate aft with a radius of action of 180 deg. only, but also operating downwards.

The bomb-load would be, of course, eliminated, but its place would be taken by the electrical generator and accumulators. In addition, the necessary modifications could be carried out, I submit, by a team of six men, fitters and electricians, in 600 man-hours, *working as a team*.

The searchlight aircraft should be suitably escorted by three fighters, above and astern of the "Hampden," when in flight.

This idea has been submitted in the "rough" to the "powers-that-be," but so far it has elicited no response.

I am a *practical* aircraft engineer, also I am an ex-pilot of considerable experience, both during the last war and in the post-war years up to 1931, and while I fully agree that speed, height and numbers have increased out of all proportion to the speed, height and numbers as in vogue during the war 1914-18, yet the *general* technique of aerial warfare remains very much the same.

The idea of flying searchlights for spotting night bombers may sound fantastic. So much so that the Official Mind recoils from the possibility of creating a precedent. Yet the Official Mind might well ponder the fact that every move by the enemy during the last six months *has* been fantastic (according to the rules!) and the very reason for its success has been solely due to the fact that the German High Command was *not* without imagination. "EX-R.F.C. AND R.A.F."

SERVICE AVIATION

Royal Air Force Awards— *—and Official Announcements*

Message to Coastal Command

THE Secretary of State for Air has passed the following message to the Coastal Command.

"I have been asked by the War Cabinet to convey to all Squadrons of the Coastal Command their admiration of the skill and courage with which they have carried out the vital and arduous but often unspectacular tasks allotted to them, and of the enterprise and success with which in recent days they have struck at the harbours, shipping and coastal defences of the enemy."

Prime Minister Praises Fighter Command

THE Prime Minister sent this message to the Secretary of State for Air, for the Fighter Command, on September 16.

"Yesterday eclipsed all previous records of the Fighter Command. Aided by squadrons of their Czech and Polish comrades, using only a small proportion of their total strength, and under cloud conditions of some difficulty, they cut to rags and tatters three separate waves of murderous assault upon the civil population of their native land, inflicting a certain loss of one hundred and twenty-five bombers and fifty-three fighters upon the enemy, to say nothing of probables and damaged, while themselves sustaining only a loss of twelve pilots and twenty-five machines.

"These results exceed all expectations, and give just and sober confidence in the approaching struggle."

Awards

THE KING has been graciously pleased to approve the undermentioned awards, in recognition of gallantry displayed in flying operations against the enemy:—

DISTINGUISHED FLYING CROSS.

Flt. Lt. E. J. Gracie. Reserve of Air Force Officers. This officer has destroyed seven enemy aircraft and damaged another five. By his outstanding leadership, skill and courage, he has proved an excellent example to all.

Act. Flt. Lt. P. S. Weaver. This officer has displayed great courage and leadership. He has destroyed six enemy aircraft. His excellent example has contributed materially to the fine standard that exists in his Squadron.

F/O. H. J. Woodward. This officer has destroyed five enemy aircraft and has displayed leadership and courage of a high order.

P/O. G. J. Lynes. On the night of the 27th August this officer took part in a raid on the transformer station at Kelsterbach. Whilst passing over the Dutch cast, the inter-communication gear of his aircraft became unserviceable. He decided to continue, however, and passed over his target at 7,000 feet, the actual area being obscured by cloud. As he was unable to pin-point the objective, he decided to descend below the clouds. He made several attempts to approach the objective, but had to carry out such violent evasive action on account of the intense anti-aircraft fire that he was unable to make a satisfactory run. Eventually, however, he managed to pass directly over the objective at 2,000 feet, and he then released his bombs himself. He dived down to 100 feet at high speed to avoid being hit, and whilst escaping from the target, the flash of the bombs could be seen as they burst on the buildings and the reflection of the flames was visible on the clouds as the aircraft left the area. By his persistent determination and his outstanding skill as a pilot, P/O. Lynes was able to destroy the primary objective in the face of heavy opposition. Since the 20th April he has taken part in thirty-two major bombing operations over Norway, Holland, Belgium, France, Germany and Italy.

P/O. J. S. Simson. On the night of the 27th August this officer attacked the German warship Gneisenau in the floating dock at Kiel from 880 feet in the face of intense enemy anti-aircraft fire and searchlights. He dropped a stick of bombs successfully across the target. Since the 17th June P/O. Simson has taken part in eighteen raids over Germany. As captain of aircraft, he has displayed outstanding tenacity, determination and devotion to duty, and has at all times set a very high standard.

Flt. Lt. R. F. Boyd, A.A.F. Flt. Lt. Boyd has led his flight into action on all possible occasions, and by his intiative and accurate shooting has personally destroyed nine enemy aircraft. He has displayed cool judgment and a keen desire to engage the enemy, irrespective of the odds against him.

Act. Flt. Lt. C. G. C. Olive. Flt. Lt. Olive has led his flight, and on occasions his squadron, both on operations in France and later throughout the intensive fighting in the defence of his country. He has personally destroyed at least five enemy aircraft. His fearlessness and cool courage in action have been a splendid example to other pilots he has led and have contributed largely to their successes against greatly superior numbers of the enemy.

F/O. H. A. C. Bird-Wilson. F/O. Bird-Wilson has shot down six enemy aircraft and shared in the destruction of several others. He has shown fine fighting qualities and determination in his attacks.

F/O. B. J. G. Carbury. During operations on the North-East coast F/O. Carbury led his section in an attack on two enemy aircraft. Both were destroyed. From 28th August, 1940, to 2nd September, 1940, he has, with his Squadron, been almost continuously engaged against large enemy raids over Kent, and has destroyed eight enemy aircraft. Five of these were shot down during three successive engagements in one day.

P/O. M. J. Herrick. During an interception patrol on the night of 4th September, 1940, P/O. Herrick sighted two enemy aircraft and destroyed them both. In his attack against the second aircraft he succeeded in closing to within thirty yards and it fell in pieces under his fire.

P/O. J. J. O'Meara. P/O. O'Meara has displayed a very high degree of skill and devotion to duty in all operations against the enemy and has destroyed at least six enemy aircraft. His example and keenness have been outstanding.

P/O. D. S. Scott. This officer has destroyed five enemy aircraft and severely damaged three others. He has flown with his squadron continuously over a considerable period and has displayed great gallantry at all times.

DISTINGUISHED FLYING MEDAL.

Flt. Sgt. A. F. Laws. This airman has taken part in numerous operational flights since May. He has destroyed five enemy aircraft and damaged another two. His initiative, courage and tenacity have been outstanding.

Roll of Honour

Air Ministry Casualty Communique No. 46.

THE Air Ministry regrets to announce the following casualties on various dates. The next of kin have been informed.

KILLED IN ACTION (WHILE FLYING IN OPERATIONS AGAINST THE ENEMY).—P/O. R. A. C. Aeberhardt, 42781; Sgt. J. H. Balmer, 745574; F/O. J. S. Bell, 90051; Flt. Sgt. F. G. Berry, D.F.M., 563426; P/O. C. R. Bonseigneur, 42791; Sgt. W. Briggs, 751402; Sgt. D. Brook, 648603; Sgt. J. Burrow, 551597; Sgt. H. Davies, 632374; F/O. C. R. Davis, D.F.C., 90131; P/O. J. K. G. Clifton, 41902; Sgt. W. J. C. Corker, 751198; Sgt. T. G. J. Cranston, 751938; Sgt. J. H. Dickinson, 740861; Sgt. J. G. B. Fletcher, 800635; Sgt. R. J. Gouldstone, 812360; Sgt. C. Haigh, 566171; F/O. O. H. W. Hanson, 33363; F/O. K. H. Higson, 70305; P/O. D. W. Hogg, 77977; Sgt. C. L. G. Hood, 746840; F/O. F. M. Hunter, 40178; A/C.2 N. Jacobson, 1050704; P/O. D. N. O. Jenkins, 41930; P/O. C. E. Johnson, 79241; Sgt. R. H. G. Jones, 905466; P/O. P. L. Kenner, 73032; Sqn. Ldr. E. B. King, 32199; L.A/C. W. Love, 523064; P/O. G. H. Maffett, 80814; Sgt. D. Noble, 742128; Sgt. A. E. Owles, 748693; Act. Flt. Lt. S. C. Pendred, 37999; Act. Sqn. Ldr. P. C. Pinkham, A.F.C., 37208; P/O. J. F. S. P. Price, 41060; P/O. J. H. Reynolds, 41803; Sgt. M. Ridley, 565201; Sqn. Ldr. H. M. Starr, 34181; F/O. W. A. Stenhouse, 39904; P/O. A. A. G. Trueman, 40766; Sgt. H. A. Tune, 581652; Sgt. S. R. E. Wakeling, 741505; F/O. R. McC. Waterton, 90197; Act. Flt. Lt. J. T. Webster, 37436; F/O. E. J. Wilcox, 70830; Sgt. L. A. Williams, 745324; P/O. D. C. Winter, 43372; P/O. C. A. Woods-Scawen, D.F.C., 40778; F/O. P. P. Woods-Scawen, D.F.C., 40452.

PREVIOUSLY REPORTED "MISSING," NOW PRESUMED "KILLED IN ACTION."—Sgt. F. J. R. Bigg, 563033; A/C.1 J. Orchard, 540259; Sgt. W. B. Woods, 580401.

PREVIOUSLY REPORTED "MISSING BELIEVED KILLED IN ACTION," NOW REPORTED "KILLED IN ACTION."—P/O. W. H. Coleman, 39781; P/O. F. T. Poole, 42722.

PREVIOUSLY REPORTED "MISSING," NOW REPORTED "KILLED IN ACTION."—P/O. H. D. Atkinson, D.F.C., 33418; Sgt. E. H. H. France, 580739; Sgt. G. W. Jones, 590727; Sgt. G. Lewis, 580549; Sgt. A. G. Murray, 759321; Sgt. F. F. Parvin, 581118; P/O. H. G. R. Pirie, 42077; Sgt. M. A. Prentice, 812244.

WOUNDED OR INJURED IN ACTION.—P/O. R. A. Acworth, 40496; P/O. J. W. E. Alexander, 42178; P/O. R. B. Barrett, 42181; P/O. D. B. Bell-Salter, 41895; F/O. J. C. Boulter, 37757; F/O. B. H. Bowring, 90105; Wing Cdr. F. J. St. J. Braithwaite, 05161; Flt. Sgt. F. S. Brown, 590264; P/O. R. H. Bunker, D.F.C., 40668; F/O. B. J. G. Carbury, 40288; P/O. J. M. V. Carpenter, 42191; P/O. H. W. Cottam, 77790; F/O. J. B. Coward, 39412; Sgt. L. Davies, 808429; Sgt. P. W. Duckers, 552182; P/O. H. W. Eliot, 42490; P/O. J. F. D. Elkington, 44184; P/O. J. L. W. Ellacombe, 43031; Sgt. P. Else, 741332; Flt. Lt. A. S. Forbes, 37499; P/O. A. V. Gowers, 40166; Sgt. W. J. Green, 813076; P/O. J. A. McD. Henderson, 74719; P/O. R. H. Hillary, 74677; P/O. D. W. Hunt, 42754; P/O. C. C. O. Joubert, 81618; Sqn. Ldr. R. G. Kellett, 90082; Sqn. Ldr. R. B. Lees, 29257; P/O. J. Lockhart, 74708; P/O. A. C. R. McLure, 82167; Act. Flt. Lt. C. Matheson, 39363; F/O. E. G. Morris, 40132; P/O. M. H. Mounsdon, 42871; P/O. D. J. C. Pinckney, 72520; F/O. R. P. Plummer, 33753; F/O. I. S. Ritchie, 90196; Act. Flt. Lt. A. I. Robinson, 39569; P/O. R. D. Rutter, 42574; F/O. D. F. B. Sheen, D.F.C., 39474; P/O. D. S. Smith, 40859; P/O. D. Stewart-Clark, 78555; P/O. F. B. Sutton, 41962; F/O. R. A. Thomson, 39398; Act. Sqn. Ldr. P. W. Townsend, D.F.C., 33178; Sgt. F. R. Walker-Smith, 741215; F/O. I. B. Westmacott, 40488; P/O. P. A. Worrall, 42291; P/O. R. E. N. E. Wynn, 81375.

DIED OF WOUNDS OR INJURIES RECEIVED IN ACTION.—Sgt. J. W. K. Allen, 740664; Sgt. H. H. Duncan, 581442; P/O. R. D. S. Fleming, 74672.

MISSING, BELIEVED KILLED IN ACTION.—L.A/C. C. J. C. Jones, 525815; Act. Sqn. Ldr. C. B. Hull, D.F.C., 37295; Sgt. J. McG. Little, 741292; Sgt. S. E. Meades, 526703; Sgt. D. F. Shaller, 746984; P/O J. C. Smitheram, 41074; Act. Flt. Lt. P. S. Weaver, 70719.

MISSING.—P/O. C. J. Arthur, 42090; Sgt. B. Baker, 935961; Sgt. J. Baker, 751839; Sgt. J. Bann, 581165; P/O. G. L. Bayliss, 44057; Sgt. H. Bentham, 552444; F/O. E. R. Berry, 39959; P/O. T. H. Borg-Banks, 41659; Sgt. H. Bowers, 743077; F/O. D. C. Bruce, 39853; Sgt. H. W. Carter, 628721; L.A/C. A. G. Child, 619035; P/O. R. S. A. Churchill, 41255; Sgt. J. C. Clarke, 743056; Act. Flt. Lt. J. H. Coghlan, D.F.C., 37719; F/O. W. H. Coverley, 70142; Sgt. R. C. R. Cox, 747819; Flt. Lt. J. L. G. Cunningham, 90194; P/O. J. W. Cutts, 40804; Sgt. B. M. D'Arcy, 561093; P/O. D. H. Davis, 44271; A/C.2 H. W. Dean, 975058; Sgt. G. M. Dickson, 626161; F/O M. D. Doulton, 90235; P/O. C. O. Dunkels, 42822; Sgt. H. Dunnington, 612371; Sgt. W. L. Dymond, 580059; Sgt. A. C. H. Edmeads, 751841; P/O. N. J. Fawcett, 41005; P/O. W. E. Fitzpatrick, 79540; P/O. C. D. Francis, 42211; Sgt. P. K. Garvey, 741796; Sgt. A. Gibson, 751217; P/O. W. H. G. Gordon, 42120; L.A/C. E. A. Hall, 510251; Flt. Lt. H. R. Hamilton, 39316; A/C.1 G. Hibbert, 538174; Sgt. M. Hill, 567598; Act. Flt. Lt. H. B. L. Hillcoat, 90256; P/O. R. M. Hogg, 33486; Sqn. Ldr. H. H. L. Hood, 26110; Sgt. H. G. H. Howard, 566374; Sgt. J. D. Hudson, 755052; P/O. T. G. Hynes, 41707; Sgt. I. Inskip, 581339; Sgt. J. I. Johnson, 520406; Sgt. N. R. Johnston, 580546; L.A/C. C. P. Jones, 536553; L.A/C. C. D. Lampard, 615949; L.A/C. W. F. Lawes, 567002; Act. Flt. Lt. R. E. Lovett, D.F.C., 37543; P/O. D. K. Macdonald, 74679; L.A/C. E. Martin, 633385; Sgt. W. Maxwell, 967872; P/O. H. W. Moody, 81046; Sgt. F. H. Newson, 755404; Flt. Sgt. H. N. Norris, 565646; L.A/C. J. P. O'Reilly, 535507; P/O. J. H. K. Parvin, 33441; Sgt. E. A. Pearce, 742651; F/O. O. St. J. Pigg, 39678; Sgt. D. W. G. Randall, 905742; A/C.1 G. Reay, 626591; P/O. R. A. Rhodes, 42529; Flt. Lt. W. H. Rhodes-Moorhouse, D.F.C., 90140; Sgt. D. C. B. Riddick, 1004679; Cpl. G. A. Rigby, 532880; Sgt. C. P. Riley, 741996; Sgt. E. A. H. Riley, 550943; Sgt. E. A. Ringwood, 629710; Sgt. H. Rolls, 615888; Flt. Lt. F. W. Rushmer, 90192; Sgt. F. C. Sawyer, 638724; Flt. Sgt. W. D. Sherriff, 362116; Sgt. J. S. Smith, 755623; Sgt. J. W. Stephenson, 550132; Sgt. R. C. E. Stiles, 639949; Sgt. A. P. Sully, 581542; Act. Sqn. Ldr. F. G. R. Thomas, 37332; Sgt. L. H. Wainwright, 581127; Sgt. A. E. Walker, 615619; A/C.1 D. C. Webb, 966677; Sgt. T. E. Westmoreland, 741143;

The King and Air Chief Marshal Sir Cyril Newall leaving the Air Ministry after a royal visit on September 17. His Majesty is wearing the uniform of a Marshal of the Royal Air Force.

SERVICE AVIATION (CONTINUED)

Sgt. R. M. Wicker, 746715; Sgt. R. J. Willcox, 590740.

MISSING, BELIEVED KILLED ON ACTIVE SERVICE (WHILE ENGAGED ON NON-OPERATIONAL FLYING DUTIES OR ON THE GROUND, THROUGH ENEMY ACTION).—Sgt. C. A. V. Attwood, 643865; A/C.1 W. A. Ayres, 610542; Sgt. F. A. E. Gates, 643900, Sgt. R. S. Hartnell, 568749; Sgt R. Heseltine, 563144; Sgt. R. T. Richardson, 740461; Sgt. E. J. Stephens, 967065; Sgt. R. J. Tompkins, 565827; Sgt. E. G. Turner, 741188.

KILLED ON ACTIVE SERVICE.—P/O. R. Ambrose, 73040; Act. Cpl. A. R. O. Barrell, 864073; Sgt. N. K. Bott, 742082; A/C.1 H. L. Burridge, 646963; A/C.1 D. Campbell, 638834; A/C.1 A. W. Clarke, 770819; A/C.1 T. P. Crowdle, 900919; Sgt. E. R. Eastoe, 754751; A/C.2 D. A. Emery, 958357; A/C.2 W. Fairfield, 1358170; P/O. A. W. Fletcher, 42828; Sgt. E. A. Graves, 632826; L.A/C. G. T. Gregory, 569989; A/C.2 D. B. Griggs, 1252107; Sgt. C. W. C. F. Harrison, 747970; P/O. R. H. Haviland, 76571; P/O. S. J. Herring, 42605; Sgt. H. C. R. Hopwood, 903368; L.A/C. W. H. Howard, 905610; Cpl. B. A. G. Imeson, 514385; Sgt. H. G. Ives. 904503; A/C.2 A. Kirk. 1103925; P/O. J. R. J. Laidlay, 79740; A/C.2 F. L. Larkin, 906240; Flt. Sgt. W. H. G. Lobam, 365473; Sgt. G. H. Loomes, 748020; A/C.2 J. Lowry, 944933; P/O. M. E. B. H. Macassey, 42136; Sqn. Ldr. R. H. S. McConnell, D.F.C., 34023; A/C.2 O. E. Milway, 1256132; L.A/C. A. H. Mole, 776021; A/C.2 R. Moon, 909698; F/O. K. Munro. 43336; Flt. Lt. M. P. O'Reilly, 27139; A/C.2 (Air Cadet) G. W. Ryall, 901751; Act. P/O. D. A. Sadler, 90937; L.A/C. H A Shackleton, 343404; A/C.2 J. W. S. Smith, 644581; Sgt. A. Steele, 550484; Sgt. E. A. Teviotdale, 748400; Sgt. K. Thompson, 742868; A/C.2 F. Walker, 1007477; Sgt. J. A. Watt, 755255; Sgt. R. J. Whiffen, 747997; Sgt. R. Williams, 748354; Sgt. F. W. K. Wood, 581423; Sgt. H. Williams, 758155; F/O. P. D. L. Yorke, 31255.

PREVIOUSLY REPORTED "MISSING, BELIEVED KILLED ON ACTIVE SERVICE," NOW REPORTED "KILLED ON ACTIVE SERVICE."—Sgt. J. D. Gwynne, 742137.

WOUNDED OR INJURED ON ACTIVE SERVICE.—A/C.2 J. O. Arnold, 972725; Act. Flt. Lt. W. P. Bain. 59480; A/C.2 R. C. J. Baker, 1153997; A/C.1 W. K. Brown, 626429; A/C.2 R. R. G. Cavender, 906332; A/C.2 B. Costin, 1182824; L.A/C. C. H. Cox, 918517; Sgt. F. P. Crawford, 351789; Cpl. G. C. Denby, 638979; A/C.1 W. C. H. Dicks, 620604; A/C.2 R. H. Edwards, 943459; L.A/C. C. W. G. Hamblion, 974821; A/C.2 T. M. Johnson, 907870; Flt. Lt. F. W. Marshall, 70447; P/O. D. G. Ross, 82429; Sgt. L. G. Smalley, 632821; Sgt. F. O. Speed, 614009; P/O. P. C. Weeks, 91228.

DIED OF WOUNDS OR INJURIES RECEIVED ON ACTIVE SERVICE.—Act. Flt. Lt. E. J. Alway, 77382; A/C.2 G. W. L. Dudley, 1182877. Flt. Lt. F. D. Harris, 39331; A/C.2 F. A. C. Holdaway, 1173749; P/O. T. N. Smyth, 33550; Sgt. A. W. Terry. 801454.

DIED ON ACTIVE SERVICE.—A/C.2 M. Angell, 1004023; A/C.2 A. J. Barnes, 1305022; L.A/C. A. Cooper, 632264; A/C.2 M. V. C. Dench, 621994; A/C.2 A. J. Horobin, 963047; A/C.2 E. Jones. 963923; L.A/C. H. P. G. Keogh, 613956; L.A/C. C. T. W. Leman, 951530; L.A/C. T. R. Morton, 1005871; A/C.2 D. Naylor, 1007682; A/C.1 A. Sorbie, 625465; A/C.2 D. A. Suter, 944760; Sgt. W. F. Wallington, 512076; L.A/C. E. V. Wilmott. 846488.

PREVIOUSLY REPORTED "MISSING." NOW REPORTED "SAFE."—A/C.1 J. Chapman, 614035; P/O. W N Lewis, 42465; A/C.2 W. McIntosh, 644566.

PREVIOUSLY REPORTED "MISSING," NOW REPORTED "PRISONER OF WAR."—Sgt. G. Beardsley, 565475; F/O. G. E. Grey-Smith, 39460; P/O. N. D. Halifax, 33404; P/O. R. C. D. McKenzie, 40405; F/O. R. Roberts, 90897; Flt. Sgt. J. T. Taylor-Gill, 590406; Sgt. D. A. Whiting, 581047.

Royal New Zealand Air Force

MISSING.—Sgt. J. E. Fuller, A39913.

KILLED ON ACTIVE SERVICE.—P/O. H. N. Hoadley, A39919; P/O. J. S. Priestley.

Prisoners of War

THE following is the latest list of British prisoners of war in enemy hands as received from German and Italian sources:—

P/O. C. Stanwicks, Esher, Surrey; Sgt. Farrow, Dereham, Norfolk; Sgt. Farley, Battersea, London; Sgt. Howard, Hull, Yorks; F/O. Palmer, Great Wight, Huntingdon; P/O. Kirk (?), Auckland, New Zealand; Sgt. L. Turnbull, Colchester, Essex; Sgt. S. Hitchings, North Road (Gabalsa?), Cardiff; Sgt. J. Bailey, Barrow-in-Furness, Lancs.

Sgt. A. Peacock, East Molesey, Surrey; Sgt. R. Cartwright, Ballymully, Limavaddy, Derry; Flt. Lt. J. Haskins, Rotherfield, Sussex; P/O. J. Silverstone, Edgbaston, Birmingham; Sgt. W. Evans, Highgate, London; Sgt. V. Holmes, London, N.W.5; Sgt. H. Mayland (?), St. Helens, Lancashire; P/O. J. Taylor, Kenilworth Cape, South Africa; P/O. S. Taunton, St. Clare Road, Salisbury; P/O. H. Walmer (?), Hale Barns, Cheshire; Sgt. M. Johnson, Cheam, Surrey; P/O. J. Caister (? Caster), 12, Shandon Street, Edinburgh; F/O. H. Burton, North Harrow, Middlesex; P/O. G. Smith, Purley, Surrey; P/O. D. McFarlane, 35, Manchester Street, London; Sgt. H. N. Barnes, North Slough, Bucks; Sgt. F. Pennicote, Waterfields, Sussex; Sgt. K. Wright, Feltwell, Norfolk; Sqn. Ldr. Willan, Bridges Tetmont, Salisbury; Flt. Lt N. C. Drury, born at Baghpore, India.

London Gazette

ROYAL NAVY.

Act. Sub.-Lt. (A) T. T. Miller to be Sub-Lieutenant (A), March 14, Sub-Lt. (A) J. R. W. Groves to be Lieutenant (A), June 20; Sub-Lts. (A) to be Lieutenants (A), with seniority as stated: (July 12) S. M. de L. Longsdon; (August 23) E. G. Barrow, A. F. Adie. To be temporary Sub-Lieutenant (A), G. W. Norbury (February 4). Temporary Sub-Lieutenants (A) to be Temporary Lieutenants (A), with seniority as stated: (August 12) J. D. Hamilton, A. R. Harris. To be Temporary Sub-Lieutenants (A): (March 26) M. O. Day, C. E. Onions, T. A. A. Gawade.

ROYAL AIR FORCE.

General Duties Branch.

The undermentioned are granted commissions for the duration of hostilities as Pilot Officers on probation:—Warrant Officer (Aug. 23, Sen. Aug. 19) R. W. Linnitt. Sergeants: (April 1) T. G. Mahaddie; (Aug. 10, Sen. July 30) F. Tribe; (Aug. 12, Sen. Aug. 7) J. Coggins; (Aug. 14, Sen. Aug. 9) G. A. Wilson; (Aug. 15, Sen. May 9) S. E. Fryer; (Aug. 17, Sen. Aug. 9) C. R. Alexander, G. A. Huxford; (Aug. 20) G. D. Bailey; (Aug. 22) L. Graves. Corporal: (June 11, Sen. May 30) D. Hope.

The undermentioned Acting Pilot Officers on probation are confirmed in their appointments and graded as Pilot Officers:—(July 27) J. T. Noble; (Aug. 3) W. A. Cuddie.

The undermentioned Acting Pilot Officers on probation are graded as Pilot Officers on probation:—(July 13) J Comar; (Aug. 3) R. M. McT. D. Lucas.

The undermentioned promotions are made with effect from July 1st, 1940:—Air Vice-Marshals to be Air Marshals (temporary): E. L. Gossage, C.B., C.V.O., D.S.O., M.C. (Acting Air Marshal); Sir R. E. C. Peirse, K.C.B., D.S.O., A.F.C. (Acting Air Marshal); Sir C. F. A. Portal, K.C.B., D.S.O., M.C. (Acting Air Marshal). Air Commodores to be Air Vice-Marshals (temporary): C. D. Breese, C.B., A.F.C. (Acting Air Vice-Marshal); R. P. Willock (Acting Air Vice-Marshal); F. G. D. Hards, C.B.E., D.S.C., D.F.C. (Acting Air Vice-Marshal); W. A. McClaughry, D.S.O., M.C., D.F.C.; M. Henderson, C.I.E., D.S.O.; K. R. Park, M.C., D.F.C. (Acting Air Vice-Marshal); D. G. Donald, D.F.C., A.F.C.; Sir C. J. Q. Brand, K.B.E., D.S.O., M.C., D.F.C. (Acting Air Vice-Marshal); N. H. Bottomley, C.I.E., D.S.O., A.F.C. (Acting Air Vice-Marshal). Group Captains to be Air Commodores (temporary): A. N. Gallehawk, A.F.C.; H. M. Probyn, D.S.O.; A. Lees, D.S.O., A.F.C.; E. D Johnson, A.F.C.; G. C. Pirie, M.C., D.F.C.; P. Huskinson, M.C.; B. E. Baker, D.S.O., M.C., A.F.C.; R. H. M. S. Saundby, M.C., D.F.C., A.F.C., D. F. Stevenson, D.S.O., O.B.E., M.C.; Hon. R. A Cochrane, C.B.E., A.F.C.; J. B. Cole-Hamilton; W. A. Cory'on, M.V.O., D.F.C.

The undermentioned promotions are made with effect from Sept 1st:—Wing Commanders to be Group Captains (temporary): H. V. Drew, O.B.E., A.F.C.; J. S. T. Fall, D.S.C., A.F.C.; C. Findlay, D.F.C., A.F.C.; L. G. Maxton, A.F.C.; J. A. Boret, M.C., A.F.C.; C. W. Bush, M.C., A.F.C.; H. H. Down, A.F.C.; G. Banting; G. V. Howard, D.F.C.; W. J. Daddo-Langlois; G. H. Harrison, O.B.E., D.F.C.; J. Oliver, A.F.C.; A. P. Davidson; J. L. M. De C. Hughes-Chamberlain; A. L. A. Perry-Keene, O.B.E.; W. A. B. Bowen-Buscarlet, D.F.C.; K. E. Ward; B. B. Caswell; F. J. Fogarty, D.F.C., A.F.C.; E. P. Mackay; J. C. Foden, A.F.C.; S. E. Storrar; H. S. Broughall, M.C., A.F.C.; S. D. Macdonald, D.F.C.; T. M. Williams, M.C., D.F.C.; C. P. Brown, D.F.C.; V. E. Groom, O.B.E., D.F.C.; F. Wright; W. J. Seward; J. A. Gray, D.F.C.; F. Beaumont; G. S. Shaw; J. McFarlane, M.C., A.F.C.; R. Ll. McK. Barbour, D.F.C., A.F.C. Squadron Leaders to be Wing Commanders (temporary): J. I. T. Jones, D.S.O., M.C., D.F.C., M.M. (ret.); J. B. Barrett; F. E. Nuttall (ret.); R. L. Edward; G. H. Loughnan; V. B. J. Jackson; A. F. Britton; R. A. Chignell; A. C. Mitchell; F. C. Sturgiss; J. A. S. Outhwaite; P. J. H. Halahan, D.F.C.; G. F. Macpherson; K. F. T. Pickles; R. C. Hancock; H. G. Wisher; H. J. Pringle, A.F.C.; J. Cox; R. S. Darbyshire; R. Harston; J. A. Easton; J. G. W. Weston; R. A. T. Stowell; C. E. St. J. Beamish, D.F.C.; W. H. Hutton; J. D. Rutherford; C. R. Lousada; W. D. J. Michie; R. B. Cunnell; J. S. Dewar, D.S.O., D.F.C.; D. H. F. Barnett; H. M. Pearson; L. F. Sinclair; H. D. McGregor, D.S.O.; E. A. Jones; G. Adnams; R. C. Jonas; L. R. S. Freestone; G. Bearne; J. W. Homer; H. C. Parker; T. W. G. Eady; G. E. Sampson; R. W. P. Collings, A.F.C.; C. V. Howes; H. L. Messiter; G. B. Keily, D.F.C., A.F.C.; J. A. H. Louden; P. L. P. Marett; R. G. Forbes; G. P. Charles; A. O. Molesworth; G. K. Horner; G. J. C. Paul; C. B. Hughes; J. E. Allen; J. A. C. Stratton; M. V. Ridgeway; R. L. Phillips; M. L. Heath; A. D. Selway, D.F.C.; F. D. Biggs; A. E. J. Pratt; R. J. C. Hunt; E. J. Laine; D. J. Eayrs, D. P. Lascelles. Flight Lieutenants to be Squadron Leaders (temporary): —A. M. A. Birch (Sen. June 1); R. H. Barlow (ret.); T. H. L. Nicholls; F. W. L. Wild; A. H. Allen; J. W. Buchanan; H. C. Bazeley (Capt., Royal Artillery); B. H. Boon; C. G. R. Lewis; R. V. L. Pattison; R. E. Baxter; R. G. Seys, D.F.C.; A. D. Murray; M. Hallam, D.F.C.; G. F. Chater; M. V. Blake; M. H. de L. Everest; M. J. Muspratt-Williams (Capt., Lincolnshire Regt.); N. B. Hallmark, D.F.C. (Capt., Cheshire Regt.); D. E. Cattell; G. L. Cruickshanks; J. B. Brolly; G. I. Pawson; D. C. Torrens; P. J. C. Canney; J. R. Gordon-Finlayson; W. B. S. Simpson; J. D. Ronald; D. G. Simmons; D. C. Yorke, D.S.O.; A. J. Mason; C. S. Cooper; G. E. Wallace; J. W. Arney; A. W. J. Clark; H. E. C. Boxer; J. D. Melvin; T. M. Buchanan; A. W. D. Miller; D. W. Balden; R. I. Jones; P. W. Townsend, D.F.C.; N. B. R. Bromley; W. A. A. De Freitas; P. T. Phillpott; C. D. Hackett; T. B. de la P. Beresford, D.F.C.; E. W. Thornewill; D. P. D. G. Kelly; L. R. Stewart; J. H. Slater; J. H. Barrett; C. W. K. Nicholls; R. E. Burns, D.F.C.; C. E. R. Tait, D.F.C.; J. Fulton; K. J. Mellor; H. M. Pinfold; W. E. Surplice, D.F.C.; R. G. Forshaw; B. Samson; G. E. Harrison; K. J. Rampling; G. D. Garvin; L. J. C. Stickley; R. P. Widdowson; D. C. R. Macdonald; R. M. Cead, A.F.C.; F. H. Roberts; C. Fothergill; K. S. Batchelor; R. M. Fenwick-Wilson; R. E. Dupont; G. M. Lindeman; R. D. Welland; V. C. Wood; F. J. O. Lashrey; W. G. Wells; J. B. Voyce; C. H. Mitchell; R. N. Smith; D. Walker; J. C. Millar; E. T. T. Nelson; C. A. Wood; C. E. E. Florigny; A. N. Cole; D. C. Smith; E. G. Campbell-Voullaire, D.F.C.; B. G. Carroll; J. E. Pelly-Fry; M. P. C. Corkery; P. Stevens; F. S. D. Burgis; J. R. Maling, A.F.C.; K. M. M. Wasse; A. A. Case; A. C. Brown, D.F.C.; S. R. R. Smith; A. J. F. Churchill; G. R. H. Black; J. J. Raine; G. P. Harger; W. S. Gardner; J. N. Glover; R. J. K. Edwards, D.F.C.; H. T. Sutton; C. F. Herington; M. M. Kane, M.B.E.; A. G. G. Baird; F. L. Newall; A. E. Saunders; J. A. C. Fuller (Capt., R. Scots); W. S. G. Maydwell (Lt., Somerset L.I.); E. R. E. Black (Capt., R. War. R.); K. V. Garside; E. Banthorpe; C. H. Press; F. R. Foster; B. E. Smith-Rewse; J. A. Chorlton; A. R. Atkins; D. O. F. Lumsden; J. Darwen; J. D. Green; R. M. Longmore; T. S. Rivett-Carnac; A. G. Dudgeon; J. C. Mayhew; P. G. S. Dickenson; L. Mathias; J. N. Dowland; D. McIntyre; C. F. King; E. C. Eaton; F. C. Hopcroft, D.F.C.; A. J. Young; R. T. F. Gates; R. E. X. Mack; R. N. Cook; V. A. Pope; H. R. Larkin; H. L. I. Brown; H. D. Cocke; J. C. McG. Lunn; D. Davies; G. J. Bush; E. A. Whiteley; R. W. G. Kitley; A. W. Fletcher.

The undermentioned Pilot Officers are promoted to the rank of Flying Officer:—(April 4, 1939) G H. B. Hutchinson (substituted for notification in *Gazette* of May 28); (Oct. 1, 1939) J. L. Riley (substituted for notification in *Gazette* of June 18); (Oct. 8, 1939) D. A. J. Foster (substituted for notification in *Gazette* of April 30); (Jan. 10) A. G. Salter (substituted for notification in *Gazette* of June 11); (Feb 9) D. A. P. McMullen (substituted for notification in *Gazette* of May 21); (Feb. 23) M. D. Evans (substituted for notification in *Gazette* of July 2); (April 23) A. M. L. Selby (substituted for notification in *Gazette* of July 2); (Aug. 17) E. R. Baker, E. M. Pain, I. H. Meggit, C. E. W. Evison; (Aug. 18) P. D. MacL. Down; (Aug. 25) J. E. Jordan; (Aug. 29) J. O. C. Kercher; (Sept. 3) R. Watson, H. T. Gilbert, B. G. Hooper, R. W. Clarke, R. N. H. Courtney, J. C. Freeborn, D.F.C., C. N. Overton, K. V. Wendel, W. J. M. Longmore, K. D'A. Taute, D.F.C., J. A. Hemingway, B. J. Wicks, J. A. Walker, D.F.C., P. V. Arderne, W. M. Sizer, J. R. Cock, D. H. Blomeley, B. J. Rofe, N. N. Ezekiel, D. G. Gribble, D.F.C., H. W. Lamond, W. D. David, D.F.C., J. F. Drummond, D.F.C., F. G. Foot, P. R. A. Ford, D. S. Smith, D. C. Carleton, H. B. Gilchrist, R. Marples, B. N. Whittle, W. J. E. Milton, D. C. Wellburn, R. K. Laycock, R. B. Weaver, G. R. Colenso, A. K. Passmore, A. D. S. Hicks, J. H. S. Broughton, E. S. Knox, G. T. Soulbgate, T. Grier, S. Brandt, R. R. Smith, A. T. N. Scoltock, J. E. Marshall, J. G. Mackid, J. R. H. Lascelles, R. B. Lord, D. J. Rose, L. T. Bryant-Fenn, K. Linton, S. J. Millen, G. C. Alington, M. D. S. Head, A. S. W. Prioleau, P. W. de B. Forsyth, M. C. Hesketh, L. G. Hunt, N. W. Pinnington, J. F. Swift, D.F.C., O. R. Morrogh Ryan, L. D. Foley, G. K. Larney, R. H. Harper, D.F.C., G. L. Ritcher, H. F. Trusecott, C. W. R. Sawyer, A. G. Espley, C. S. S. Rendle, D. R. Strachan, R. H. B. Field, P. J. Valachos, T. M. Kane, E. C. Lenton, J. D. Young, P. A. Kimpton, R. B. Knowles, R. F. Martin, W. Beringer, J. D. Willis, R. Howe, R. G. Wigg, J. A. A. Gibson, D.F.C., B. V. Rees, J. Clayton, N. G. Cranna, J. W. Smith, R. F. Inness, C. I. R. Arthur, G. H. Pemberton, R. J. E. Boulding, P. N. Screeton, C. O. J. Pegge, R. I. F. Ber. B. Finucane, W. J. Swift, J. A. Millar, J. R. Hardacre, G. B. Murray, P. V. Averst, C. N. Birch, A. F. Eckford, G. E. Pittman, V. G. Daw, D.F.C.

The undermentioned are transferred to the Technical Branch (24 April):—

Wing Commanders.

J. W. Lissett; R. St. H. Clarke, A.F.C.

Squadron Leaders.

C. H. B. Bullock; A. H. Fear; J. N. Knowles.

The undermentioned Pilot Officers relinquish their temporary commissions on return to Army duty:—(19 July) D. K. Morrison (2nd Lt., R.E.); (12 Aug.) F. W. Humphreys (2nd Lt., R.E.); P/O. T. McN. Ormiston resigns his short service commission (27 Aug.).

Erratum.

In the *Gazette* of 16 July notification concerning Sg. G. A. Watt. *For* 14 June *read* 12 June.

Technical Branch.

The undermentioned are granted commissions for the duration of hostilities as Flying Officers on probation:—Warrant Officers: (4 June, Sen. 15 Feb.) C. J. Collins; (26 Aug., Sen. 15 Feb.) L. Hilton; (29 Aug., Sen. 14 March) G. G. Cole.

SERVICE AVIATION (CONTINUED)

The undermentioned are granted commissions for the duration of hostilities as Pilot Officers on probation:—Flight Sergeants: (26 June, Sen. 30 May) R. V. Leitch; (28 Aug., Sen. 20 June) N. G. H. Weeks.

The undermentioned promotions are made with effect from 1 Sept.:—Wing Commanders to be Group Captains (temporary): I. M. Rodney; C. F. Chinery, O.B.E.; T. A. Warne-Browne, D.S.C.; E. H. Richardson; G. D. Daly, D.F.C.; C. N. Ellen, D.F.C.; C. E. Williamson-Jones, D.F.C. Squadron Leaders to be Wing Commanders (temporary): R. D. McE. Hart; F. Porter; W. Smith; A. J. Brister; J. Turner; J. W. Rose, D.S.M.; T. C. Penna; E. F. Thorpe; V. F. Whatling, D.S.M.; P. F. G. Bradley; G. H. H. Procter; R. C. Jordan; J. F. Tadman, C.G.M.; E. Coleman, D.F.M.; G. D. Green; E. C. W. S. Smith. Flight Lieutenants to be Squadron Leaders (temporary): D. Saward; J. W. Bayley, M.B.E.; F. E. Croce; F. G. Hammond; W. J. Loughhead; D. H. Newton, M.B.E.; F. Wilmshurst, D.S.M.; R. H. Garner; W. R. Mayes, D.S.M., A.F.M.; C. W. Baker, M.B.E.; V. J. Casey; J. R. Welsh, A.F.M.; R. K. Nicholas; H. E. Newing; H. Hipwood; R. B. Cleaver; P. Allerston; A. W. Daniels; C. Turl, D.S.M.; G. Bird; F. C. Whenman; M. Downer; S. W. Birch; J. H. Tuckey; H. J. Sanders; E. J. A. Knight; B. H. Rolles; J. Heffernan; T. Griffiths; F. W. Jenkins; H. R. Clowes; F. W. G. Aggett, M.B.E.; A. W. Coe; A. J. Richardson; W. H. King; A. J. Nicholas; J. K. Tough; J. C. Steadman; L. A. Bett; A. C. Oatway; E. L. Magrath; C. T. McKnight; R. W. Hase; R. K. Jeffries.

Balloon Branch.

The undermentioned are granted commissions for the duration of hostilities as Pilot Officers on probation:—Warrant Officers: (19 Aug., Sen. 12 Aug.) G. England; (20 Aug., Sen. 6 Aug) A. R. B. Chambers. Corporal: (22 Aug., Sen. 5 Aug) A. J. Gregory.

Administrative and Special Duties Branch.

W.O. C. A. Killick is granted a commission for the duration of hostilities as Flying Officer on probation (13 July, Sen. 10 July).

The undermentioned are granted commissions for the duration of hostilities as Pilot Officers on probation:—Warrant Officers: (24 Aug., Sen. 15 Aug.) H. J. Searle, M.B.E.; (26 Aug., Sen. 5 Aug.) L. A. Wright; (31 Aug., Sen. 20 Aug.) F. S. Lovell. Flight Sergeant: (18 Aug., Sen. 5 Aug.) F. J. Garwood. Sergeants: (25 Aug., Sen. 25 April) S. Findlay; (25 Aug., Sen. 2 May) R. St. C. Lawrence.

Fl. Lt. E. J. Bradbury is promoted to the rank of Squadron Leader (temp.) (1 Sept.).

Equipment Branch.

Fl. Sgt. S. Nunn is granted a commission for the duration of hostilities as Pilot Officer on probation (22 Aug., Sen. 6 Aug.).

The undermentioned Pilot Officers on probation are confirmed in their appointments:—(3 April) A. A. R. Burne; (23 Aug.) N. C. Ogilvie.

The undermentioned promotions are made with effect from 1 Sept.:—Wing Commanders to be Group Captains (temporary): R. F. Osborne; F. H. Sims. Squadron Leaders to be Wing Commanders (temporary): A. B. Wiggin (ret.); P. J. Murphy (ret.); C. J. Nobbs; E. G. Northway, M.B.E.; R. B. Brown; H. D. Jackman; R. B. Fleming; E. F. Smith. Flight Lieutenants to be Squadron Leaders (temporary): J. E. Watson, M.B.E.; W. R. McCleery, A.F.M.; H. P. Simpson, M.M., A.F.M.; H. F. Thomas, M.B.E.; H. Lovegrove; E. F. Curtis; D. Stacey; A. C. Thorne. Flying Officers to be Flight Lieutenants (temporary): M. R. Preece (ret.); H. J. Bamber (ret.); R. R. Goodbody; R. F. B. Guy; F. G. C. Gilbert; A. MacR. Aberdein; W. R. Ford; E. G. Farthing; C. T. Wardman; R. V. B. Franklyn; A. J. Goatly; J. P. Cody; R. P. Norman; P. N. Sowman; D. J. Barber; B. R. Siminson; F. P. Dawson; J. S. Atkinson; A. R. Chrisp; P. A. B. Neel; G. E. Robinson; G. W. Topliss; R. G. J. White; M. G. Lees; A. Miller; K. H. Gooding; J. B. Connolly; A. G. Satton; D. G. Scott; C. J. G. Ferguson; J. P. M. Woolley.

Accountant Branch.

The undermentioned are granted commissions for the duration of hostilities as Pilot Officers on probation:—Warrant Officers: (2 Aug., Sen. 26 July) R. Carrigan; (28 Aug., Sen. 12 Aug.) J. E. Towlson. Leading Aircraftman: (26 Aug., Sen. 8 Aug.) A. G. J. Bullough.

Flying Officer on probation J. Pirie is confirmed in his appointment (18 May).

The undermentioned promotions are made on the dates stated:—(1 Sept.) Group Captain to be Air Commodore (temporary), H. J. Down, C.B.E. Wing Commander to be Group Captain (temporary), R. Byrne, M.C. Squadron Leaders to be Wing Commanders (temporary), G. Goodall; W. R. Donkin; J. J. T. Rose; R. W. L. Glenn; H. J. Titherington. Flight Lieutenants to be Squadron Leaders (temporary), W. E. Ennis (ret.); J. J. Caiger (ret.); (4 Sept.). Flying Officers to be Flight Lieutenants (temporary): P. H. Reason; L. T. Starling; J. L. Sanderson; B. T. Procter; H. W. Secar; W. E. Wolsey; J. B. Denning; H. S. Maurice-Jones; R. P. Bennett; P. H. Baker; H. E. Kelsey; H. C. Staines; W. J. Mather; B. Crawford.

The undermentioned Flying Officers are promoted to the rank of Flight Lieutenant:—(4 Sept.) C. A. Ball; D. F. Blain; P. S. Gee; T. P. F. Trudgian; G. R. Bowler; P. S. Dundas; W. J. Evans.

Princess Mary's Royal Air Force Nursing Service

Sister Miss N. Howker is placed on the retired list at her own request (31 Aug.).

Royal Air Force Reserve

Reserve of Air Force Officers.
General Duties Branch.

The undermentioned promotions are made with effect from 1 Sept., 1940:—Squadron Leaders to be Wing Commanders (temporary): H. G. Brackley, D.S.O., D.S.C.; J. F. F. Pain. Flight Lieutenants to be Squadron Leaders (temporary): A. D. Bennett; J. Beaumont; R. Louis; B. A. Oakley; C. R. J. Hawkins; K. D. Knocker; N. J. Capper; H. J. Wilson; J. A. Dobson; I. W. Braye, D.F.C.; F. F. Rainsford.

The undermentioned Flying Officers are promoted to the rank of Flight Lieutenant on the dates stated:—(3 Sept.) A. Cairnie; H. Marsden; G. E. Lowdell, A.F.M.; E. Bradley; F. U. Hollins; W. A. H. B. Burnside; A. B. Corfe; A. Reid; J. D. Kirwan; D. O. Young; W. R. Oliver; J. N. Addinsell; A. F. Muir; G. Thomas; A. G. Bullmore; E. C. Corke; K. C. Winton; E. H. Rossington; (8 Sept.) F. E. Everett; G. H. Porter; H. N. Gravenor; (11 Sept.) K. C. Baker.

Fl. Lt. A. G. Adams relinquishes his commission on cessation of duty (4 August).

Equipment Branch.

The undermentioned promotions are made with effect from 1 Sept.:—Flying Officers to be Flight Lieutenants (temporary): G. W. Lavington; R. C. Presland; D. A. Watson.

Accountant Branch.

The undermentioned promotions are made with effect from 1 Sept.:—Flight Lieutenants to be Squadron Leaders (temporary): H. C. F. Ellis; A. D. Stonehouse.

The undermentioned Flying Officers are promoted to the rank of Flight Lieutenant (temporary) (4 Sept.):—J. R. Bond; N. E. D. Hutchinson.

Royal Air Force Volunteer Reserve.
General Duties Branch.

The undermentioned are granted commissions for the duration of hostilities as Pilot Officers on probation:—(19 Aug.) R. Allerton-Austin; R. B. Finney; S. Gillaspy; L. S. Levitt; W. L. McIlwraith; H. R. Meehan; E. Goddard; (26 Aug.) A. H. Rawnsley; (29 Aug.) E. Cohen. Sergeants: (24 March) C. R. Barrett; (18 June) A. Ingle; R. E. Jones; (24 July, Sen. 2 May), D. R. Bevis; (27 July, Sen. 21 July) A. I. Lindsay; J. P. Lloyd; (27 July) D. R. Arknell; (10 Aug.) D. L. Pitt; (17 Aug., Sen. 11 Aug) G. G. Bailey; E. M. Gunter; (22 Aug., Sen. 14 Aug) B. S. E. Beattie; F. M. Nicholson; (24 Aug., Sen. 9 Aug.) F. Williamson; (24 Aug., Sen. 18 Aug.) R. P. Davey; P. J. Duncan; G. C. M. Fletcher; R. L. Goord; R. J. Heavens; A. R. Hill; J. G. Millard; C. G. W. Moore; D. G. Ross; G. de G. Sells; S. R. E. Weatherley; H. M. D. Magill; W. D. Castello; P. Bois; A. H. Burton; C. W. M. Dallas; A. C. Holburn; (24 Aug.) O. R. Matheson; J. D. Lodge; E. R. M. Pears; J. A. Whittett; R. E. Tallis; (31 Aug., Sen. 24 Aug.) J. McGibbon; K. W. Mackenzie; J. L. Ward; G. H. Westlake. Corporal:—(3 July, Sen. 9 May) A. J. Clegg. Acting Corporal:—(11 Aug.) A. W. Sulston. Leading Aircraftmen:—(30 June) J. A. C. Venn; (28 July) B. A. Godsmark; R. F. Tapp; (11 Aug.) H. P. Brancker; M. S. Carter; J. Duffin; C. C. M. Gauldie; J. E. Gibson; A. Y. Hamilton; A. E. Whittaker; (17 Aug., Sen. 11 Aug.) N. Sutton; (25 Aug.) C. P. Dugdale; F. A. C. Jackson.

G. G. Sharpe is granted a commission for the duration of hostilities as acting Pilot Officer on probation, Aug. 26.

The undermentioned Act. Pilot Officers on probation are graded as Pilot Officers on probation:—(July 27) A. G. Inderwick, S. Carlin, M.C., D.F.C., D.C.M.; (August 17) L. B. R. Way.

The undermentioned Flying Officers are promoted to the rank of Flight Lieutenant.—(Sept. 3) J. Hill. E. D. Lash. C. G. Higgins. A. G. Douglas, K. H. Salusbury-Hughes, E. L. Gosling. D. J. Hamilton, A. C. Smith.

The undermentioned Pilot Officers are promoted to the rank of Flying Officer:—(May 1) M. M. Maynard; (May 8) I. W. Sutherland; (July 31) E. C. Gardner, H. H. Ricketts; (Sept. 3) W. R. L. Beaumont, R. A. R. Chalmers, A. F. Martindale, T. C. Pick.

In the Gazette of June 25. *For* J. R. J. Laidley *read* J. R. J. Laidav.

In the Gazette of August 6. *For* S. Carlin *read* S. Carlin, M.C., D.F.C., D.C.M.

Technical Branch.

Sgt. P. H. Welch is granted a commission for the duration of hostilities as Pilot Officer on probation (August 26, Sen. May 16).

Flt. Sgt. T. H. L. Stovin is granted a commission for the duration of hostilities as Act. Pilot Officer on probation (July 2, Sen. May 16).

Balloon Branch.

The undermentioned are granted commissions for the duration of hostilities as Pilot Officers on probation:—(Aug. 16) D. J. Dorey; (Aug. 17) E. A. Gater, Sergeant: (Aug. 17, Sen. Aug 12) A. E. Webb. Corporals: (Aug. 19, Sen. Aug. 6) E. Green; Aug. 20, Sen. Aug. 12) A. S. Haslam (Aug. 21, Sen. Aug. 12) W. T. Darler, B. King; (Aug. 23, Sen. Aug. 6) J. H. S. Mitchell; (Aug. 23, Sen. Aug. 13) T. H. Parkinson; (Aug. 25, Sen. Aug. 12) D. J. Ferguson; (Aug. 26, Sen. Aug. 6) W. Orange, C. B. Peach; (Sept. 3, Sen. Aug. 12) E. J. Hill. Leading Aircraftmen: (July 3, Sen. June 25) R. F. Moss, H. S. Samuel; (July 11, Sen. June 24) C. B. Smith; (July 16, Sen. June 24) J. J. J. Lovelady. Aircraftmen, 1st Class: (July 3, Sen. June 25) L. M. Geraghty (July 12, Sen. June 24) C. S. Tribe, A/C.2 (July 3, Sen. June 25) C. W. Janes.

A/C.2 J. M. Carrall-Wilcocks is granted a commission for the duration of hostilities as Act. Pilot Officer on probation (Aug. 28, Sen. July 29).

The undermentioned Flight Lieutenants are promoted to the rank of Squadron Leader (temp.): (Sept. 1) F. T. Stacey, H. P. Johnston, M. Hunter, H. H. Harries,

Administrative and Special Duties Branch.

The undermentioned Southern Rhodesian Air Force Officers are granted commissions for the duration of hostilities in the ranks stated:—Squadron Leader: (March 21) C. W. Glass. Flight Lieutenants: (March 21) D. R. B. Bentley, W. H. Eastwood, I. D., C. Fynn, R. F. Hall, A. M. James, B. Roxburgh-Smith, E. M. Saunders; (May 1) R. A. Jubb. Flying Officers: (March 21) E. H. Davy, G. Ellman-Brown, J. E. Mazorati, G. J. Meyers, H. A. M. Miller; (April 22) E. R. Marsland; (July 1) A. A. Brown; (Aug. 9) H. Hallam. Pilot Officers: (July 8) G. L. Ferguson; (July 19) G. C. Barclay.

W. Kidd is granted a commission as Flight Lieutenant (Sept. 1, 1939, Sen. March 28, 1939).

The undermentioned are granted commissions for the duration of hostilities as Pilot Officers on probation:—(June 26) T. E. Broadbent; (June 28) S. B. Sheckell; (June 27) W. J. Barclay, W. B. Benton, R. G. Hartigan, W. Moore, W. H. de W. Unett; (June 28) F. W. Walter, H. Walton; (June 29) G. J. Beckett, G. P. Burton, E. F. Dealing; J. A. Eckes, E. V. G. Mackenzie, J. Meredith, A. C. Stacey; (June 30) B. H. S. Stephenson; (July 1) J. T. Boughen, H. J. Clements, J. C. McGrath, M.C., G. S. Morley, H. Sharples, F. A. Teale, A. Thomas, E. C. Wroth; (July 2) E. H. Evans, W. W. Hammond, E. P. Hardman, R. Rostron, J. A. H. B. Somerville; (July 5) E. G. W. Carter, T. Evans, M.C., J. Webster; (July 4) E. F. E. Hammond, F. Smith, W. A. Stratford; (July 5) F. Foster, M. Kelly; (July 8) R. T. Durrant, J. W. Fairbrother, A. W. Ryan; (July 9) Lord L. H. Annaly, M.C., E. F. Batten, O.B.E., C. H. Ommanney, F. Sabbatella, D.C.M.; (July 15) W. W. Home, M.C., M. G. Kidston; (July 17) C. E. Gardner, J. S. McCubbin; (July 18) L. Parsons; (July 20) M. C. Baldwin, H. T. Curtis, F. T. Kitchin; (July 23) A. G. Russell; (July 25) P. A. G. MacCarthy; (July 26) W. H. Brighton; (July 27) A. G. Paus, D. A. Raeburn; (July 29) A. Kearsey, D.S.O., O.B.E., T. W. H. Sarll, H. R. G. Whates; (Aug. 5) C. H. Glanville; (Aug. 7) M. A. Tomlinson; (Aug. 9) K. F. Howard, W. D. Melluish, J. L. Myler; (Aug. 10) H. R. W. Ellison; (Aug. 12) T. J. C. Baly, R. J. F. Burrows, G. E. Daniel, J. A. French, A. A. John, T. W. Lloyd, E. Nordberg, G. E. Pearson, R. Richmond-Brown, G. F. De Sausmarez, H. W. Wiley; (Aug. 13) F. E. M. Puxon, W. J. B. Whiteway-Wilkinson; (Aug. 14) J. A. Hatton; (Aug. 15) C. B. Abbott, W. B. Frampton, F. S. Goss, C. P. McLauchlan, H. C. V. Porter, O.B.E.; (Aug. 16) J. H. Herbertson, B. H. Higgins, S. C. Howes, A.F.C., A. P. Leigh; (Aug. 17) H. Austin, A. J. Bridge, A. V. Britnell, J. D. L. Gammie, C. Taylor, J. W. Vick; (Aug. 18) L. G. Blundell, G. L. Coutts, R. A. E. Ellis, K. A. B. Gilfillan, L. F. Odell, J. A. Strong, H. Tibbenham; (Aug. 19) R. A. W. Bicknell, M.C., E. B. Birtwhistle, A. G. Brown, V. D. Carr, E. F. Chapman, F. T. Cooke, L. Crossley, E. M. Ferrera-Nicholson, D. W. Harris, G. E. Lowell, H. E. Ormond, S. Pike, H. W. Pope, W. E. F. Powell, R. C. Van der Ben, M.C., D.F.C.; (Aug. 20) A. L. Day; (Aug. 21) L. J. Audus, R. P. Clarke, A. H. Clayton, F. H. Cowley, S. E. Crutchfield, H. T. B. Dew, W. H. Furness, J. A. Green, N. H. Kaye, I. H. Kerr-Cross, H. H. Longley, G. Nelson, J. Skinner; (Aug. 22) L. V. Bell, G. F. Bullock, H. Claye, C. L. J. Garrard, W. J. Gow, R. D. Hunnam, D. S. Lawrence, W. C. A. Meade, C. W. Noël, R. L. Smith, P. Yeoman; (Aug. 23) L. J. Biddle, J. L. Bisset, R. H. Dawson, W. L. Ferrier, J. A. Fox, E. B. Joynson, E. G. T. Lowe, W. S. Mathews, C. M. Wilson, H. J. G. Wolf; (Aug. 24) A. W. L. Burke, P. M. W. Butler, L. C. Cole, D. J. Farquharson, P. E. Suckling, A. F. Welsh; (Aug. 25) T. F. Mitchell; (Aug. 26) J. A. Allport, F. Allsop, P. R. M. Barker, E. K. Bullus, F. W. Davies, W. S. Greenlaw, D. A. Koster, N. Lyons, K. W. Malkin, W. H. McNeile, J. A. Obdam, H. H. R. Schleman, C. H. Smith, H. H. Smith, N. Woods; (Aug. 28) C. S. St. B. Seale; (Aug. 31) S. Alder; (Sept. 1) S. S. Fuller.

The undermentioned are granted commissions for the duration of hostilities as acting Pilot Officers on probation:—Corporals: (Aug. 30, Sen. July 25) R. F. S. Goebel, R. H. Miskin. Leading Aircraftmen: (Aug. 23, Sen. July 29) C. A. Wimperis; (Aug. 28, Sen. Aug. 13) R. E. Dowling.

The undermentioned are granted Honorary commissions in the ranks stated: (Aug. 27) F/O. R. J. Bates, P/O. S. J. Abbott.

P/O. on probation D. R. Smith-Bingham is transferred to the General Duties Branch (July 27).

Flt. Lt. W. Kidd is transferred to the Technical Branch (April 24).

The undermentioned Pilot Officers on probation resign their commissions:—(Aug. 15) F. F. Wessell; (Aug. 28) B. G. Horstmann; (Aug. 30) A. North; (Sept. 1) Sir E. J. M. Brunner, Bt.

The commissions of the undermentioned Pilot Officers on probation are terminated on cessation of duty:—(July 5) J. A. Broughton-Trower; (July 19) C. R. Macnamara; (Aug. 23) S. B. Sheckell; (Aug. 29) A. M. Knill; (Sept. 5) M. Cope; (Sept. 9) D. F. McD. Sinclair.

The notification in the *Gazette* of Nov. 14, 1939, concerning W. Kidd is cancelled.

SERVICE AVIATION (CONTINUED)

The notifications in the Gazette of Aug. 6 concerning Pilot Officers on probation J. A. Broughton-Trower and C. R. Macnamara is cancelled.

Equipment Branch.

The undermentioned promotions are made with effect from Sept. 1:—Flight Lieutenants to be Squadron Leaders (temporary): R. D. Lambert, G. N. G. Monck-Mason, O.B.E., H. V. Alexander. Flying Officers to be Flight Lieutenants (temporary): T. J. Erskine, J. R. Pocock, C. F. Moseley.

Accountant Branch.

L.A/C. D. A. Marten is granted a commission for the duration of hostilities as Pilot Officer on probation (Aug. 29, Sen. Aug. 2).

The undermentioned are granted commissions for the duration of hostilities as Acting Pilot Officers on probation:—(June 4) H. W. Wilson, Leading Aircraftman; (Aug. 17) G. W. Gomm.

The undermentioned promotions are made with effect from Sept. 1:—Flight Lieutenants to be Squadron Leaders (temp.): W. F. Barrell, J. T. McBride, C. P. P. Brice, C. J. Chaytor, J. T. Keay, M.C., D. McNaught, J. E. Bonham, L. Ritson, R. A. Downs, J. J. Hart, M.C., W. G. Tolson, A. L. Wilkes, D. G. Ponsonby, D.S.O., H. Overton, A. E. Moreton, T. O. Wilkinson, A. Bennett, R. L. Morgan, A. J. Croft-Cohen, E. Chuter, M.C.

Medical Branch.

The undermentioned are granted commissions for the duration of hostilities as Flying Officers (Aug. 27):—R. H. Anthony, M.R.C.S., L.R.C.P., J. L. Barnardo, M.R.C.S., L.R.C.P., P. F. Barwood, M.B., B.Chir., M.R.C.S., L.R.C.P., A. E. Burton, M.R.C.S., L.R.C.P., J. A. Campbell, M.B., B.Chir., M.R.C.S., L.R.C.P., F. Constable, M.R.C.S., L.R.C.P., G. W. S. de Jersey, M.B., M.R.C.S., L.R.C.P., P. H. Denton, M.D., B.S., L.M.S.S.A., C. V. Gledhill, M.R.C.S., L.R.C.P., P. J. Kelly, M.B., B.Ch., J. L. Lawrence, M.R.C.S., L.R.C.P., H. A. Lee, M.B., B.S., M.R.C.S., L.R.C.P., H. T. Macaulay, L.R.C.P. & S., G. A. Mandow, B.Ch., M. A. Margo, M.R.C.S., L.R.C.P., P. J. O'Connor, M.B., B.Ch., T. P. O'Brien, M.B., B.Ch., D.P.H., S. A. Smith, M.B., Ch.B., R. M. Williams, M.B., B.S., M.R.C.S., L.R.C.P.

Dental Branch.

The undermentioned are granted commissions for the duration of hostilities as Flying Officers:—(August 27) R. A. Beck, L.D.S.; R. D. Garthwaite, L.D.S.; E. C. Hammond, L.D.S.; R. Lauchlan, L.D.S.; A. G. Marks, L.D.S.; W. Stredder, L.D.S.

Chaplains' Branch.

The undermentioned are granted commissions for the duration of hostilities with the relative rank of Squadron Leader:—(August 23) The Rev. A. S. Ireson, M.A.; (August 26) The Rev. G. E. Williams; (September 3), The Rev. H. Lowe.

Auxiliary Air Force

General Duties Branch.

Act. P/O. on probation C. D. Strickland is confirmed in his appointment and graded as Pilot Officer (August 17).

Act. P/O. on probation A. C. James is graded as Pilot Officer on probation (July 13).

The undermentioned promotions are made with effect from September 1:—Squadron Leaders to be Wing Commanders (temporary): C. G. Hohler, F. Crerar. Flight Lieutenants to be Squadron Leaders (temporary): J. R. Kayll, D.S.O., D.F.C., J. Sample, D.F.C., G. L. Denholm, A. M. Maclachlan, D de B. Clark, H. M. Mitchell, J. A. Davies, D. R. Scott, A. V. R. Johnstone, J. D. Urie, A. G. Miller.

The undermentioned Pilot Officers are promoted to the rank of Flying Officer:—(September 3) K. T. Lofts, E. M. Frisby, G. C. Hunter, J. S. Morton, P. T. Parsons, D. J. Looker.

F/O. W. O. Stern is transferred to the Administrative and Special Duties Branch (September 4).

Balloon Branch.

The undermentioned promotions are made with effect from September 1, 1940:—Wing Commanders to be Group Captains (temporary): W. C. C. Gell, D.S.O., M.C., T.D., D.L., O. D. Smallwood, C.B.E., T.D., D.L., A. P. Besley, J. Pearson, M.C., E. J. Davis, F. V. Drake, M.C., E. L. Gower, A.F.C., W. G. Horne, P. L. Lincoln, D.S.C., M.C. Squadron Leaders to be Wing Commanders (temporary): J. M. Aiton, G. E. S. Lamb, E. J. S. L. Brooke, R. A. Hall, J. P. Hitchings, A. W. N. Addison, C. E. Benson, D.S.O., J. Henderson, K. F. Angus, O.B.E., M.C., T.D., H. W. Tait, D.F.C., J. M. Todd, D.F.C., T.D., R. Risk, M.C., R. Caley, M.C., H. Hall. Flight Lieutenants to be Squadron Leaders (temporary): J. C. W. MacBryan, G. J. Rayner, R. A. Hodgson, N. F. Blackie, W. G. T. Summers, M.C., D.C.M., M.M., A. E. Renwick, M.C., H. C. Covell, T.D., A. M. Cave, R. C. Yates, D. F. Larkins, W. V. Dumbreck G. H. S. Edgar, G. Towsend-Rose, A. A. Winser, V. E. Vincent, W. H. Demel, D.F.C., G. F. Earle, A. B. Johnston, M.C., T. C. Annan, D.F.C., K. A. MacFadyen, W. M. Gibson, M.C., E. G. Bunce-Phillips. Flying Officers to be Flight Lieutenants (temporary): R. A. Cooksey, T.D., G. D'O. Sheppard, F. L. Ingall, H. D. Corlett, T.D., J. Toulmin, F. J. Cleare, H. W. Hailstone, K. H. F. Veasey, K. F. Berry, J. J. Briggs, A. E. N. Morris, G. N. Dawson, A. Blande, D.S.O., H. M. Whitehead, Sir R. R. Brickwood, Bt., Lord Ashburton, A. E. L. Hill, A. J. Barnes, F. Gregory, J. S. H. Chalmers, Sir A. E. W. Weldon, Bt., V. L. Benson, R. N. Lochhead, M.C., C. L. Read, M.C., D. H. Prosser, C. G. J. Whiteside, H. A. Underhill, M.C., J. S. Houston, T. A. Carlile, T.D., W. H. W. Sellars, R. L. Huins, P. E. Paget, A. King-Smith, K. E. Parkes, A. D. P. Thomson, G. A. Lawson, C. F. P. Lowe, F. W. Shea, M.C., C. U. Lloyd, R. W. Gaudie, H. Macfarlane, R. H. Cale, M.C., C. A. Francis, J. M. Simpson, F. D. Yates, V. G. E. Gardner, T. R. Poppy, W. Roper, D.F.M., G. Carleton, H. Mills, D. H. Barnes, C. L. L. A. de Beaumont, F. M. Wright, W. E. Blakeney, J. B. Burnard, R. J. Baker-Wilbraham, P. D. Tuckett, A. G. Birch, E. W. Ward, R. V. N. Shutte, J. W. G. Purser, H. E. C. Rubie, G. A. Usher, E. N. Adlington, G. E. S. St. Johnston, J. C. Fitzgeorge-Parker, J. Rigby, G. M. A. Maxwell, J. H. G. Pattinson, R. W. Toft, D. L. Rumble, G. E. Harding, C. H. Ratcliffe, E. H. Darwood, T. A. F. Robinson, N. E. Williams, D.F.C., N. J. Smallthwaite, B. de L. Cazenove, M.C., D. Johnston.

Equipment Branch.

Flying Officers to be Flight Lieutenants (temporary): E. G. Frost, E. J. D. Ettwell.

Accountant Branch.

The undermentioned Flying Officers are promoted to the rank of Flight Lieutenant (temporary):—(September 4) T. C. Garden, J. W. D. Wardale, W. L. Dunn, F. A. White, J. H. C. Albrecht, W. G. Duke, W. M. May, J. M. Horsley.

Auxiliary Air Force Reserve of Officers

General Duties Branch.

The undermentioned Pilot Officers are promoted to the rank of Flying Officer:—(September 3) B. H. Moloney, W. F. Carnaby.

Accountant Branch.

F/O. C. R. Griffiths is promoted to the rank of Flight Lieutenant (temp.) (September 4).

Women's Auxiliary Air Force

The undermentioned are appointed Assistant Section Officers:—(August 8) Sgt. Mrs. V. I. M. Henderson; (August 12) A/CW.1 Miss D. H. Britain; (August 20) A/CW.2 Mrs. M. E. McK. Murray-Threipland, Sgt. Miss M. J. Perkins, A/CW.2 Miss A. E. Weightman; (September 7) A/CW.1 Miss C. R. Andrew, A/CW.2 Miss H. Avery, Sgt. Miss T. M. Biddlecombe, A/CW.1 Miss B. C. Calvert, A/CW.2 Miss R. E. Cory, A/CW.2 Miss W. P. Down, A/CW.1 Miss M. H. Gibson, A/CW.1 Miss V. Glaves, A/CW.1 Miss J. M. Hawes, A/CW.1 Miss P. E. Hind, A/CW.2 Miss C. Hindshaw, A/CW.2 Miss E. B. M. Hoy, A/CW.2 Miss R. Jensen, A/CW.1 Miss O. Kay, A/CW.1 Miss M. J. Manning, Cpl. Miss V. Martin, Cpl. Miss R. Metcalfe, A/CW.1 Miss M. Platt, A/CW.2 Mrs. D. M. Poole, Sgt. Miss J. Reading, A/CW.1 Miss K. T. Redman, A/CW.1 Miss P. M. Salmond, Cpl. Mrs. E. A. Stedman, A/CW.2 Miss J. M. Strachan, Cpl. Miss A. L. Tod, A/CW.2 Miss E. M. Townsend, A/CW.2 Miss H. C. N. Turnbull, A/CW.1 Miss L. M. Williamson, A/CW.2 Miss M. W. Willis; (September 8) A/CW.2 Mrs. P. J. Adams, Sgt. Miss M. E. A. Cobb, A/CW.1 Miss U. R. Davis, Sgt. Mrs. E. M. Robertson, A/CW.2 Miss M. M. Tucker, A/CW.2 Miss C. G. Underhill; (September 9) Sgt. Mrs. I. K. Beves, Sen. Sgt. Mrs. M. Fish, A/CW.2 Miss G. M. Hodges.

Mrs. Z. O. Tierney relinquishes her appointment (September 2).

MINENWERFER: Loading a Handley Page Hampden with a parachute mine. The dropping of these mines goes on every night and is very exacting work. It calls for extremely accurate navigation, since narrow channels have to be found during the hours of darkness, and sometimes under heavy anti-aircraft fire.

Testing the Rotol Electric

A ROTOL Electric airscrew, fitted to a Bristol Hercules engine, has just successfully completed a test of 250 hours. During the test the airscrew received no attention whatever, a fact which speaks highly of British workmanship and design. The period of 250 hours is equivalent on a modern bomber to twice round the world.

Bombay Flying Club

FLYING time for the month of June amounted to 179 hours, three "A" licences being awarded and army co-operation work being carried out. A distress call was answered by sending out an aeroplane to take an inflated rubber tube to a drowning man, and as this was successfully dropped within 3ft. of him his life was saved.

Export of "Flying Fortresses"

THE Boeing B-17B, popularly known as the "Flying Fortress," has been put on the export list, and so will be available for sale to Britain. With a span of 103ft. and length of 68ft. its total loaded weight is 37,000 lb. Speed is given as 268 m.p.h. at 14,000ft., and it has four geared Wright GR-1820 engines rated at 1,200 h.p. for take-off. Range is given as 4,200 miles and service ceiling as 29,300ft.

6, 1940

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